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MISSOURI BOTANICAL GARDEN

BULLETIN

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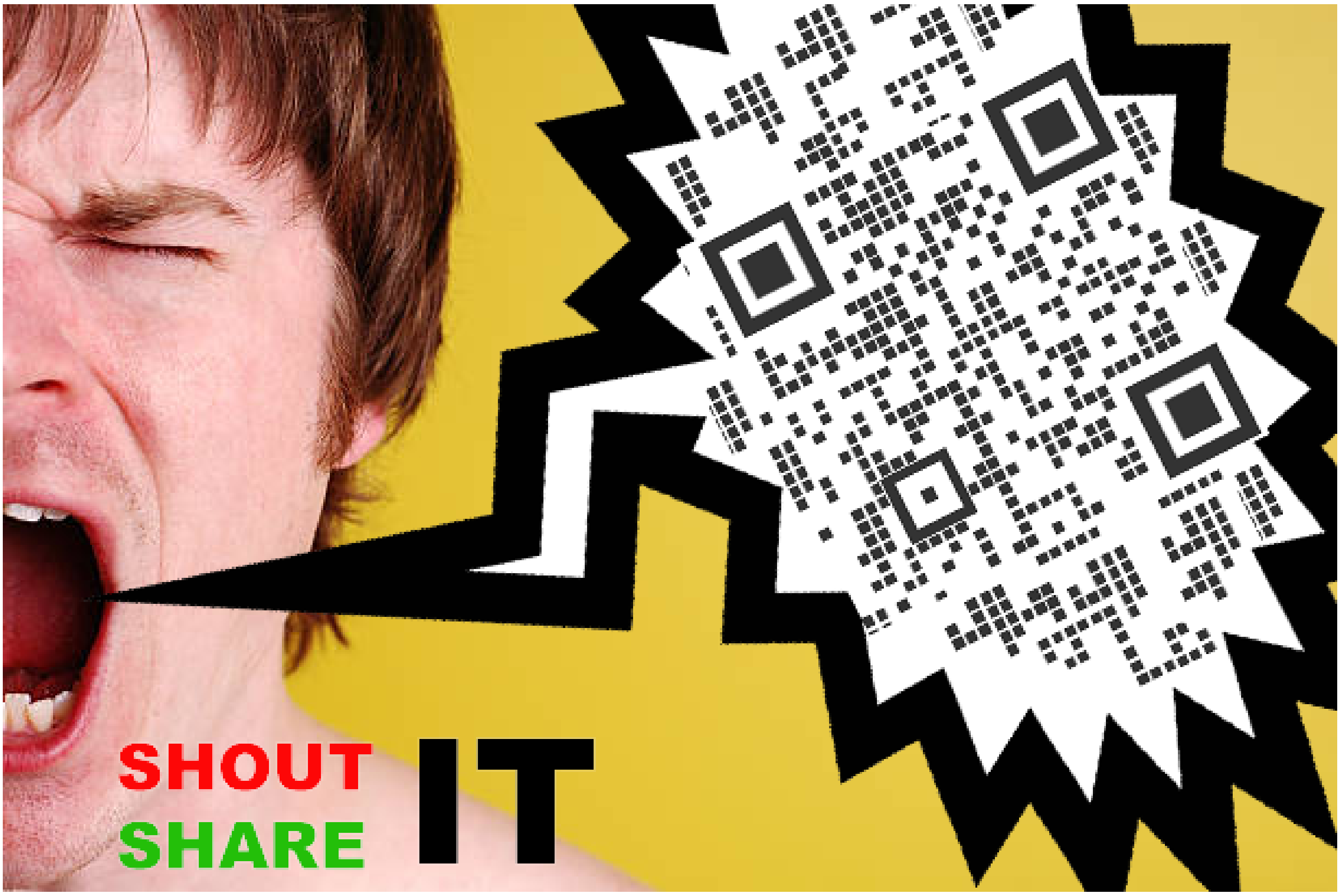
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Missouri Botanical Garden Bulletin

MEDITERRANEAN HOUSE OPENS AT 2 p.m., SATURDAY, JANUARY 10

At 2 p.m. on Saturday, January 10, the Mediterranean House, the Garden's first Bicentennial project, will open. As detailed in the December 1975 *Bulletin,* the Mediterranean House is the first greenhouse in the country to be devoted exclusively to the display of mediterranean plants of the world. The project was conceived by Dr. Peter H. Raven, Director of the Garden.

Located just north of the Climatron, the Mediterranean House at opening time will contain about 250 different species of plants from all five mediterranean regions of the world. The greenhouse also will feature cobblestone paths, representative of urban Mediterranean regions, benches, a small fountain and a grape arbor. The design for the interior was developed by Karl D. Pettit of Eugene J. Mackey and Associates.

ADELINE BOYD
Roots of Japanese Art - Sources and Traditions

ADELINE BOYD LECTURE SERIES FOR MEMBERS OF THE GARDEN AND THE ASIAN ART SOCIETY: 10:30 a.m. on Jan. 5 and 19 and Feb. 2 and 16, Lehmann Building auditorium. Enrollment $15 per person for the series. Contact Mrs. David S. Lewis, Jr., 41 Trent Drive, St. Louis, Mo. 63124, 993-1011.

Ikebana arrangements graced the setting at a reception following the dedication of Tortoise Island. With Dr. Raven are Mrs. Walter E. Morris, center, and Mrs. John L. O'Brien.

Tortoise Island Dedicated

Tortoise Island, one of three islands within the Japanese Garden, was dedicated recently at ceremonies attended by over 100 guests including members of Ikebana International, The Japanese American Citizens League, and the Japan America Society.

The island, suggestive of a semi-submerged tortoise (sketch of island on page two), was the gift of the St. Louis chapter of Ikebana International. Fund-raising activities enabled the organization to donate $3000 toward the development of the island.

Mrs. John L. O'Brien, president of the St. Louis Ikebana chapter, presented Dr. Peter H. Raven with a miniature marble tortoise, symbolic of eternal youth. Mrs. Walter E. Morris, past president and founder of the St. Louis Ikebana chapter, was chairman of the dedication program, which concluded with a reception

Continued on next page

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January 1976

in the John S. Lehmann Building.

Crane Island will be dedicated January 18, and is sponsored by the Federated Garden Clubs of Missouri -East Central District.

Following are the remarks which Dr. Raven delivered at Tortoise Island's dedication.

"On behalf of the Trustees and staff of the Missouri Botanical Garden, I am delighted to accept this beautiful Tortoise Island. Around you can be seen the beginnings of our Japanese Garden, a feature that will enrich our lives for many years to come. Over the next year this *hiraniwa,* or dry garden, will be filled with raked sand, and its southern portion planted with graceful weeping cherry trees to contrast with the rugged individuality of the pines around us. The eight-plank bridge, or *yatsuhashi,* will grace the far shore of the lake, and will be surrounded in spring with blooming iris plants. A teahouse will arise on the central island, and the area will steadily approach its ultimate form.

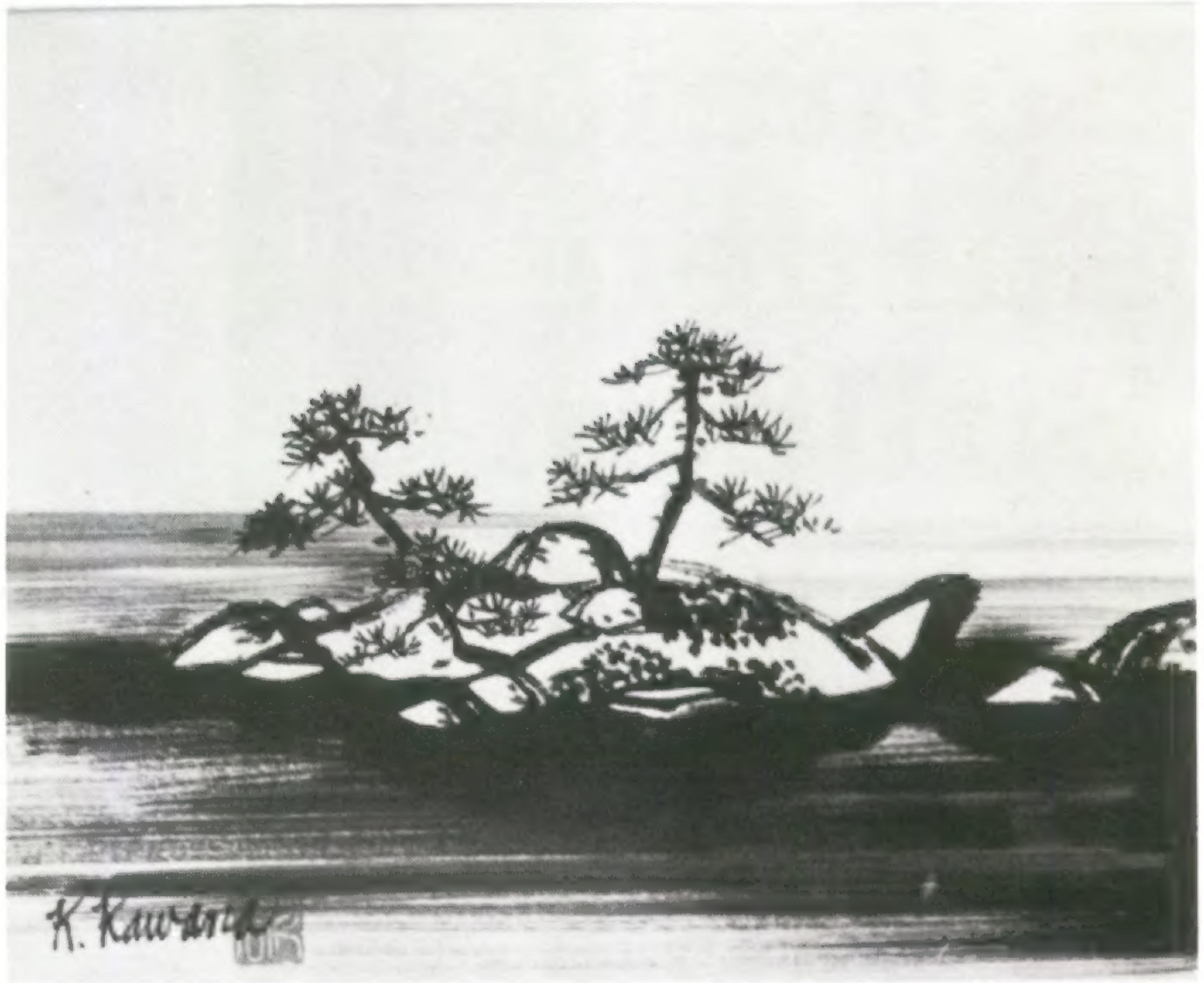
"In placing this Tortoise Island here, Professor Kawana has enabled us to celebrate a tradition that goes back at least 3,500 years, to the beginnings of the Bronze Age in China, where inscribed tortoise shells were found in association with early bronze implements. Ancient Chinese legends tell of tortoises arising from the Yellow River with mystical writings on their backs. By the Han Dynasty, in the Second Century A.D., the tortoise shows up as a regular feature of the decorations of burial chambers.

"From ancient times, the Chinese have associated the tortoise with winter. Its withdrawal from public view at the beginning of the winter, as it moves into hibernation, symbolized for them the slackening pace of human activity at that time, the men coming in from the fields, and the women working at their chores inside the houses. In Chinese tradition, the tortoise is exclusively female, its male counterpart being the snake, this resulting in a familiar design motif of oriental art.

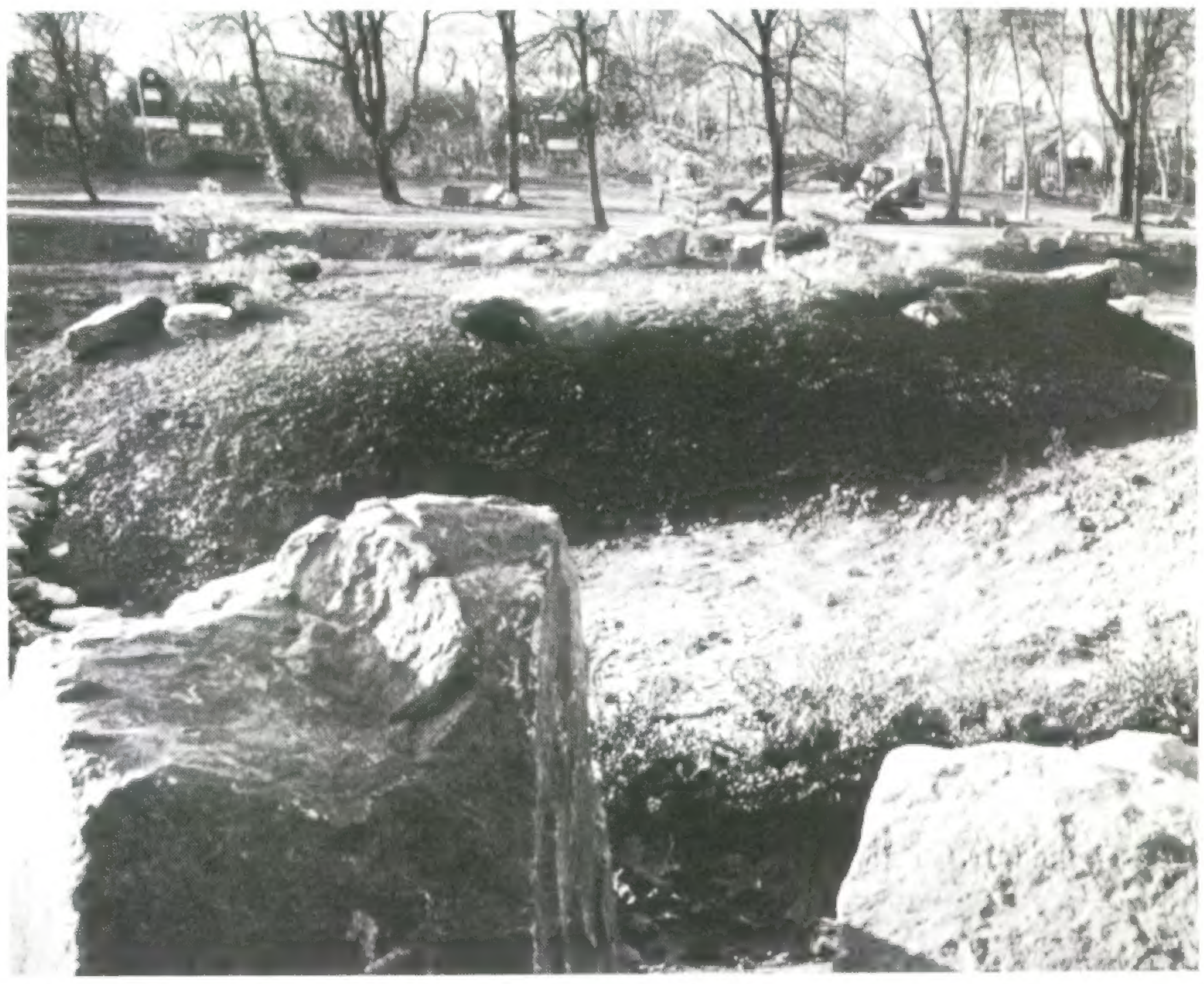
"I hope that these brief remarks have provided some insight into the meaning of what we are trying to accomplish here. I will close by reading a translation of a Japanese poem, written by a former emperor at the Kameyama Palace in Kyoto just 700 years ago:

Eternity
And the pine trees on Tortoise Hill
Reflected in the clear waters
Of the palace pond

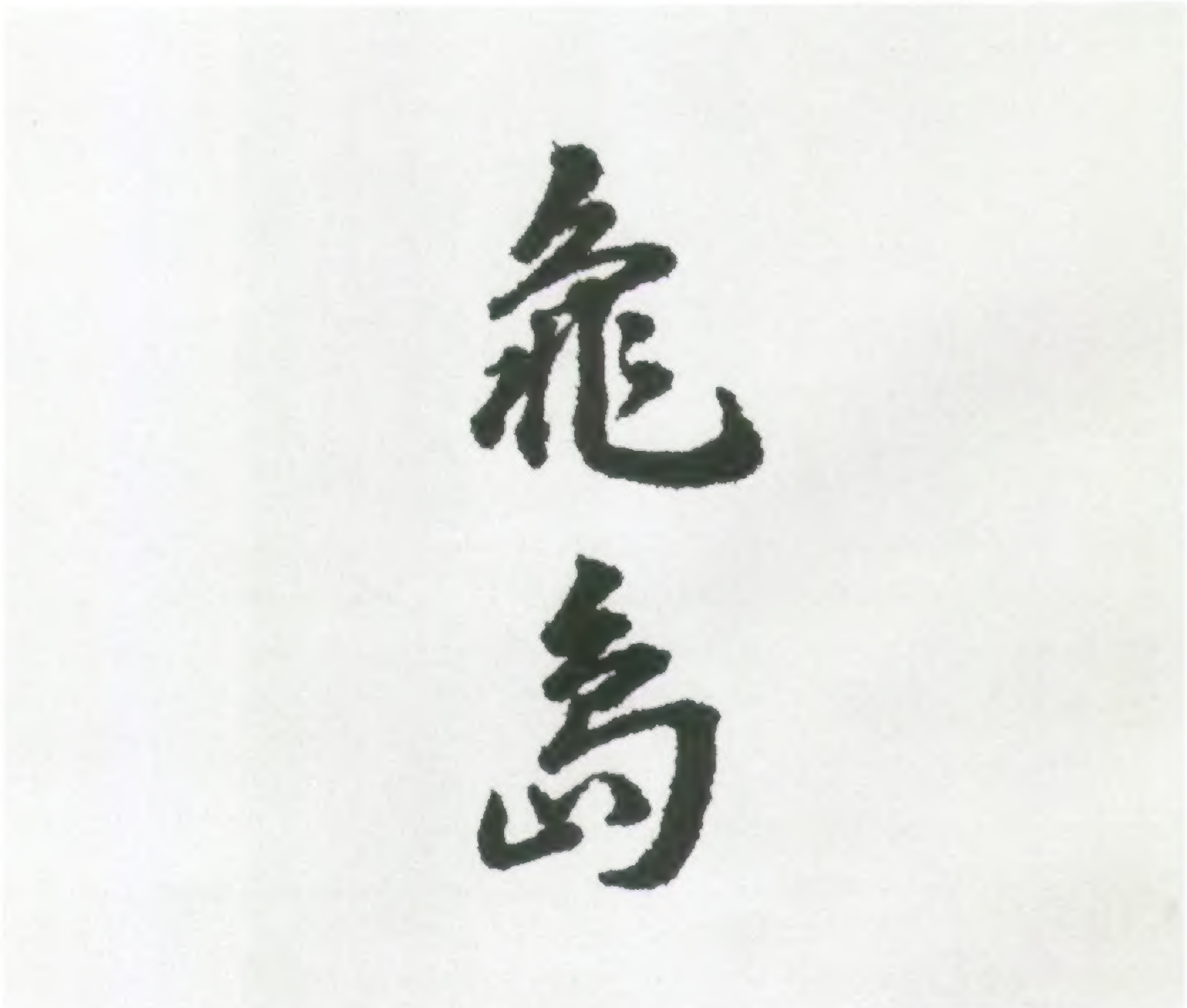
In this evocation of the auspicious images of the tortoise and pine trees, both of which symbolize long life, the poet clearly expresses good wishes for the owner of the garden, and his concept is that of the unearthly land of the immortals. In the same spirit, we gratefully accept the gift of this Tortoise Island, and pledge to hold it in trust for the citizens of our community."



Designer Koichi Kawana's sketch of Tortoise Island.



View of Tortoise Island in Japanese Garden.



In Japanese: "Tortoise Island."

HYPONeX
HYPONeX
HYPONeX HOUSE

From left: Jamie Weldon, Dave Koch, Randy Anderson.

HORTICULTURAL SALES DEPARTMENT REORGANIZED

The Horticultural Sales Department has recently begun moving in new directions as a result of a major reorganization designed to broaden the depth and scope of the horticultural services offered by the Garden.

Randy Anderson has been named to the newly-created position of Horticultural Sales Manager and will coordinate all areas of horticultural sales within the Garden. His appointment was announced by Dr. William M. Klein, Assistant Director of the Garden.

Anderson, a native of Nebraska, comes to the Garden after four years of study at Colorado State University, Fort Collins, Col., in Ornamental Horticulture. He also completed a summer internship at the Longwood Botanical Gardens, near Philadelphia, and has had wide experience in floral management, design, and sales. He will supervise the Garden's Plant Shop, Answerman Service, and Horticultural Contracts.

Anderson will work in conjunction with Jamie Weldon, Plant Shop Manager, and Dave Koch, Horticultural Contracts Manager; also recently appointed to their respective positions. Together, the three hope to provide a fuller variety of plants, and more comprehensive plant information — reflecting the full scope of botanical possibilities suitable for home or commercial settings.

While directly benefiting the Garden, Horticultural Sales also are an important outreach of the Garden's continuing effort to stimulate greater understanding and awareness of the existing botanical world. The Garden presently maintains 26 outside horticultural contracts throughout the St. Louis area which serve to enhance botanical interest within the community-at-large.

The Answerman Service is also growing to meet the community's heightened demand for plant information. A class of 15 volunteers recently completed an expanded training program within the Answerman program in order to handle the ever-increasing number of calls.

Jamie Weldon, Plant Shop Manager, reports that a wider variety of plants will be available and more professionally displayed at the plant shop. He envisions an expanded staff of additional volunteers, readily identifiable in new uniforms, to assist customers in choosing the right plant for their particular needs.

Chief advisor to the Horticultural Sales Department is Robert Dingwall, Director of Horticulture.

SECOND MEMBERS' TOUR TO ENGLISH GARDENS

Following the success of the Members' trip to the English Gardens in 1973, under the direction of John Elsley, Curator of Hardy Plants at the Missouri Botanical Garden, we are pleased to announce that another tour to England will take place during the spring of 1976. Mr. Elsley will again accompany the group which will depart from St. Louis on Wednesday, May 19 and return Sunday, May 30.

Although final plans have to be confirmed, it is intended that the tour will operate from a "base" in central London, visiting the gardens in Kent and Sussex. In addition to such famous gardens as Nymans, Sissinghurst Castle, Heaslands and Wakehurst Place, it is hoped that other renowned private gardens will be included in the itinerary. While in London the party will visit the Chelsea Flower Show — the finest and most famous show of its kind in the world. A visit to the Chelsea Physic Garden, one of London's oldest and most interesting horticultural and botanical institutions — a garden not normally accessible to visitors, will also be included.

A special three day excursion, with headquarters in Oxford, will provide opportunities to visit the classic landscape gardens of Stowe and Rousham House, the Oxford Botanic Garden — Britain's oldest botanic Garden founded in 1621, and such other famous gardens as Hidcote Manor and Kiftsgate Court in Gloucestershire. Finally, a tour of the superb show gardens of the Royal Horticultural Society at Wisley will conclude the itinerary.

Further details and information may be obtained by telephoning American Express Company's Travel Department, 241-6400, and ask for Beverly Soltys, who will be the trip coordinator, or by contacting the Garden's Membership Office — 772-7600.

Gardening in St. Louis

JANUARY GARDENING

As the New Year begins, we should reminisce about the garden we had last year and begin making plans for the garden we hope to have this coming year. Being a Bicentennial year, emphasis can be on a special garden or garden layout and on the colors red, white and blue. Anyone can have red, white and blue petunias but how about coming up with something that's more of a challenge to grow, as far as flowering material is concerned?

Seed Catalogs

Now is the time to review the new seed catalogs that have been arriving to narrow down interests to a few well chosen plants that we feel we can grow successfully. Orders for bulbs and seeds should go in as early as possible to assure early delivery. For those who started with vegetable gardens last year or who want to start one this year, January is the month to get seed orders in. During the next month we will invariably have a thaw, and this is when the cool crops such as spinach, peas, and cabbage should be planted.

When a brief spell of warm weather hits later, remove the mulch from the ground and cover the area with black plastic to help capture the sun's rays and warm the soil up for the first 24 to 48 hours. Then remove the black plastic and plant your seeds to the required depth.

Forcing Bulbs

The middle of this month is a good time to start forcing the bulbs that were planted last October. These should now have made good root growth and can be brought indoors, placed in a dark, warm spot and kept moderately moist until the first node, or two or three inches of bulb are above the soil line. Then place the pots in an area where they receive full light during the day. The pots should be kept in a cool spot with good light so as not to force the plants too much which will end up in a weak, spindly growth and often the flower buds will dry up. Bulbs forced at this time of year will take about 4 weeks from the start of forcing until they are in bloom.

Those who purchased extra seed last year should run a germination test; sprinkle a few seeds — 10 or 20 on damp blotters; place these in a warm, dark spot and examine daily. Keep the blotters constantly moist. At the end of 3 to 4 days, seeds should have germinated and you can count the number of seeds that are showing sprouts. Those that have not yet germinated will not germinate this coming spring. This will give you a good idea how thick to plant the seeds for best results this year. Germination usually decreases from one year to another.

On mild days, check through the garden to see if any plants have heaved out from heavy frost. If so, they should be firmed back down into the soil to prevent them from drying out. Place a little mulch in around the base of the plants to prevent further heaving.

House Plants

At this point house plants will benefit by having their leaves washed in warm water or warm milk. Also check thoroughly for signs of insect damage such as scale or mealy bug. This should be removed immediately by either washing the plants or using a mild spray that is not too toxic to either you or your animals. After spraying, place the plants where it is warm enough for the plants to dry and the odor to fade. Avoid using sprays in any food areas.

Later this month, branches from apple trees, forsythia, and other early spring flowering shrubs may be brought indoors and sprayed with warm water several times a day (the bathtub is an ideal area to do this); keep them in a warm spot and they will gradually open their blossoms giving an early hint of spring to come.

Those of you with home greenhouses should hold back on planting your annuals or other plants unless you can get them out very early in the spring. Too early a start will make the plants overly large, taking up more room than what you can afford. Planting hardy plants 6 weeks before they can be set outdoors is the general rule of thumb. Tender plants planted 4 to 6 weeks is early enough.

Most plants will not be growing significantly as yet due to the very short days. Therefore avoid excess use of fertilizers which could be harmful. Be sure all plants receive adequate light and turn them occasionally to give them good balance.

Foundation Plantings

Due to the very dry fall season, it is important during warm periods this month and next for foundation plantings to receive extra water if rains have not been heavy this month. Because the foundation tends to draw moisture away from the plants, a good watering will prevent winter damage.

Make sure that foundation plants are heavily watered and that the water has a chance to penetrate down to the base of the roots for best effects. Allowing areas close to the foundation to run dry can cause loss of plants.

Where space and light are adequate, you may enjoy starting a few of the early herbs and annuals which can be grown in pots and mature very quickly. Placed in a sunny south window or a warm home greenhouse, herbs can add extra flavor to winter dishes within about 6 weeks after first starting from seed.

Robert Dingwall
Chief Horticulturist

EXHIBIT OF LINOLEUM BLOCK PRINTS BY HENRY EVANS ON DISPLAY JANUARY 12 - FEBRUARY 6

An exhibit of linoleum block prints by Henry Evans, noted California print-maker, will be on display in the lobby of the John S. Lehmann Building from January 12 through February 6. These prints are part of the Garden's permanent collection of Evans' work, purchased through a bequest from Angela Sterbenz, a long-time resident of South St. Louis and frequent visitor to the Garden. A small selection of Mr. Evans' prints will be available for sale during the exhibit. Inquiries should be made through the Garden's library.

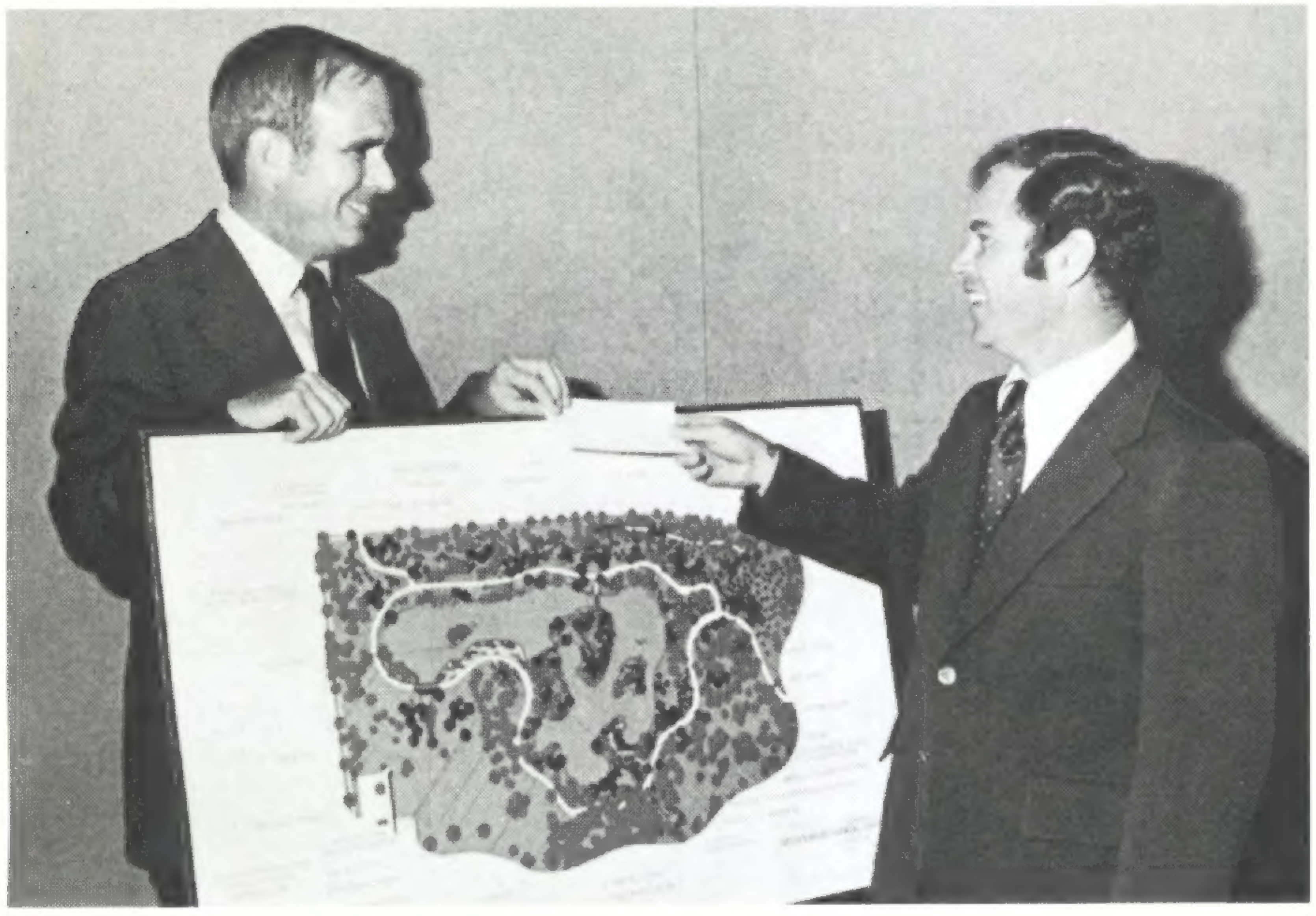
Exhibit hours will be 9:00-5:00, Monday through Friday.

NICKY BOTTGER WATERCOLOR COURSE

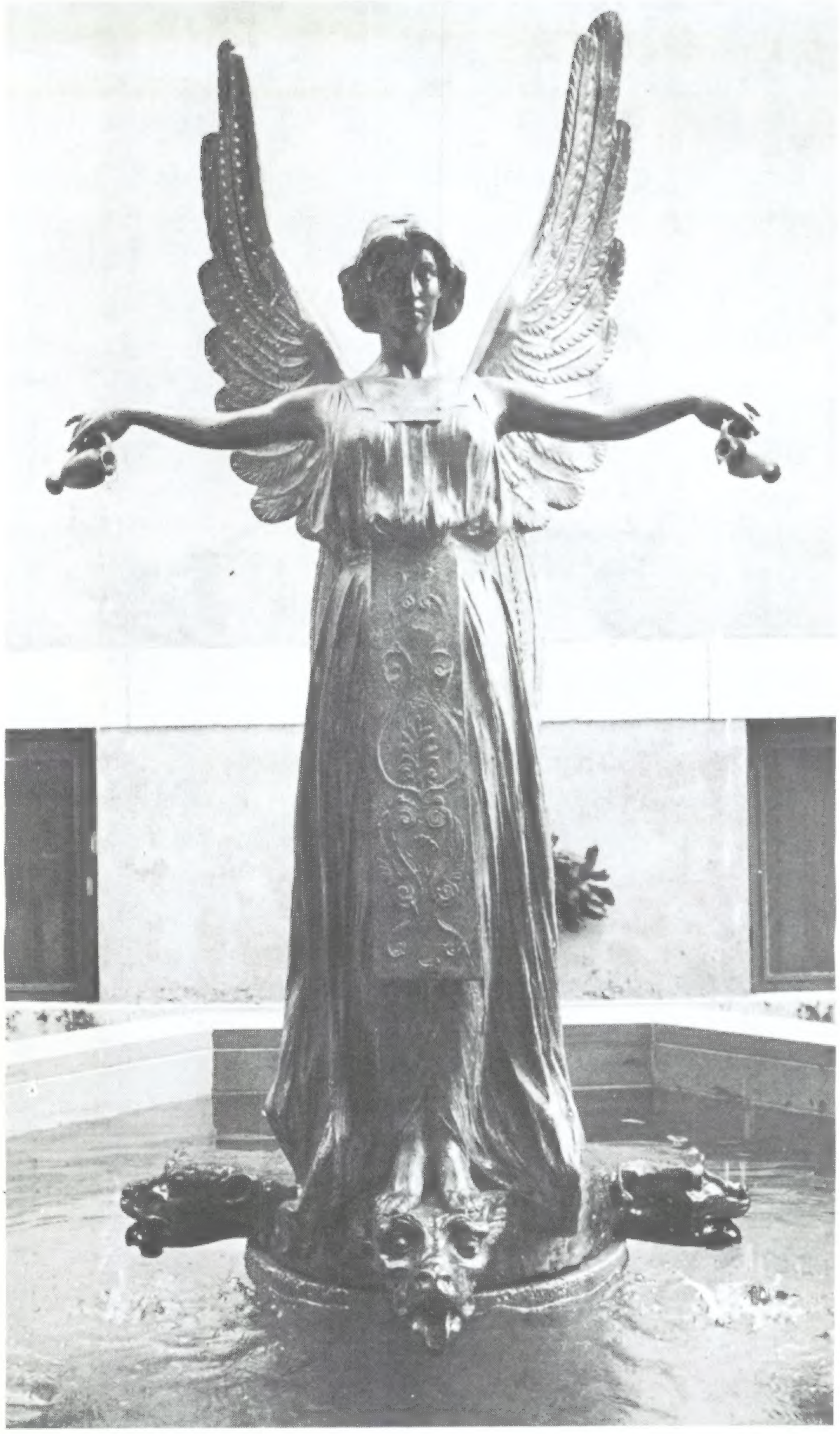
A ten-week course in basic watercolor painting will be given by Mrs. Nicky Bottger, beginning January 21 and continuing every Wednesday through March 24. Intended for both beginning and advanced students, lessons will focus on the Climatron and other beautiful settings in the Garden. Students will provide their own supplies which will be listed at the first meeting. Class sessions will be held in the Museum Building from 9:30 a.m. to 12:30 p.m.

Enrollment will be limited to 25 students. Interested persons may register by mailing a check, for $39.00 to the Continuing Education Department, Forest Park Community College, 5600 Oakland Avenue, St. Louis, Mo. 63110. For information, call 664-3300, ext. 301.

Mrs. Bottger is a well known St. Louis watercolorist who has taught privately and at The Lindenwood Colleges, and at Forest Park and Meramec Community Colleges. Her own watercolors are exhibited locally and nationally.



James L. Wilson, right, Director of the Department of Natural Resources, presenting a check for $300,000 to Dr. Peter H. Raven, Director of the Garden. This appropriation was made by the 78th Assembly of the Missouri Legislature to the Department of Natural Resources for the Japanese Garden, pictured in the diagram above. Mr. and Mrs. Wilson inspected the progress on this project during their recent visit.



The Strauch Fountain

One of the newest features at the Garden is the Strauch Fountain, given in memory of John B. Tillie Strauch. The fountain was designed by William A. Bernoudy and completed in September. It is situated directly west of Tower Grove House. Its central feature is a lovely bronze angel originally installed at the Lindell-Skinker entrance to Forest Park as part of the 1904 World's Fair. The angel was sculptured by Romano Romanelli, and was originally presented to the World's Fair Commission by David N. O'Neill. In 1907 it was relocated to an area near the Municipal Opera, where it remained until shortly before its installation at the Garden.

During the past summer the angel was restored by Phoebe Weil of the Center for Archaeometry at Washington University, and was treated with a protective coating of corrosion inhibitor, Incralac, and a micro-crystalline wax in order to forestall deterioration of the bronze.

BICENTENNIAL LECTURE, 'HOW MANY BOTANY BOOKS DID JEFFERSON OWN?', BY DR. JOSEPH A. EWAN

Dr. Joseph A. Ewan, Ph.D., professor of Botany at Tulane University and one of the nation's leading botanical historians, will present a lecture entitled "How Many Botany Books Did Jefferson Own?" as part of a Bicentennial lecture series sponsored by the Garden along with other cultural and educational institutions in the Greater St. Louis area.

The lecture, to be given at 7:30 p.m. on February 2 at the Forest Park Community College's Performing Arts Center, is one of 15 programs within the series entitled "The World of Thomas Jefferson" which will begin January 12 and continue through April 19.

Tickets for the series are $25. Garden members have received applications for series tickets. Individual tickets for the botany lecture are $2 for adults, students $1. Reservations can be made by calling 664-3300, ext. 266.

CALENDAR OF EVENTS

January 10	Mediterranean House Opening
January 12 through February 6	Exhibit: Linoleum Block Prints, Henry Evans Lobby, John S. Lehmann Building
January 18	Dedication of Crane Island Japanese Garden
January 31 through March 16	Orchid Show Climatron
February 2	Bicentennial Lecture: "How Many Botany Books Did Jefferson Own?". Dr. Joseph A. Ewan Forest Park Community College, Performing Arts Center, 7:30 p.m.
February 28-29	African Violet Society Show Floral Display House
March 6-7	Spring Garden Workshop Floral Display House
March 19	Members Spring Preview Party Floral Display House
March 20 through April 11	Spring Flower Show Floral Display House

From left: Dr. George E. Pilz, Dr. Robert E. Magill, Dr. Arthur J. Hicks.

Grant Will Support Museum Training Program In The Department of Botany

The Garden has received a grant of $24,682 from the National Endowment for the Arts to support a one year museum training program in the Department of Botany.

The program will train three recent Ph.D.'s in Botany in the management of herbarium, or dried plant, collections. Herbaria serve as repositories for voucher specimens of plants used in scientific studies and as reference tools for identification of unknown specimens.

There are over 500 herbaria in the United States but none have offered formal training in herbarium management. The Missouri Botanical Garden's collection of over two and one half million specimens is one of the largest and most important in the country, and with a staff of 30 will expose the trainees to the many aspects of managing such collections. The trainees are Dr. Arthur J. Hicks, University of Illinois; Dr. Robert E. Magill, Texas A & M University; and Dr. George E. Pilz, University of California-Berkeley.

Member of
The Arts and Education
Fund of Greater St. Louis

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M. P. CRONIN, Editor

SUBSCRIPTION RATES:
$5.00 per year. $6.00 foreign.

Scenes above are from the Members' Preview Party, attended by over 1600 and sponsored by Famous-Barr Co. The event opened the annual Poinsettia Show which is on view through January 11 in the Floral Display House.

During the party, both the Garden Gate Shop and the Plant Shop were open. Members received discounts on purchases and their response to the shops' expanded lines was described as overwhelming.

Report on the 1975 Systematics Symposium

Approximately 300 scientists and graduate students from all parts of the United States attended the Twenty-second Annual Systematics Symposium held at the Garden, October 17-18, 1975. This yearly event draws together botanists and zoologists to hear about latest developments in systematics and closely related fields. The 1975 topic was: "Evolution at the Population Level." Since systematists and taxonomists classify the end products of the evolutionary process as they are seen today and also attempt to explain how these end products may have come about, it was fitting that this topic was considered for 1975. It is at the level of local populations that the nitty-gritty evolutionary events and processes of gene mutation, changes in chromosome structure and number, genetic recombination, natural selection, and reproductive isolation take place. The six Symposium speakers dealt with certain aspects of these processes and related them to the adaptation and speciation of plant and animal populations.

Dr. H. L. Carson, University of Hawaii, spoke on adaptation and speciation at the microevolutionary level and attempted to identify the genetic basis for adaptational and speciational events. Dr. J. Antonovics, Duke University, examined the nature of limits to natural selection based on his own and students' studies of plant populations. Dr. G. Johnson, Washington University, discussed his studies on adaptation in butterflies of the genus *Colias* in the Rocky Mountains of Colorado. His studies showed strong evidence for the natural selection of certain forms of enzymes which enable the butterflies to adapt more successfully to the different environmental conditions found in the mountains.

Dr. O. T. Solbrig, Harvard University, presented a hypothesis to account for the development of the two main breeding systems in plants, cross- and self-fertilization. Empirical evidence from work with *Leavenworthia,* a genus of the mustard family, was presented in support of his hypothesis. Dr. R. W. Cruden, University of Iowa, discussed his recent research of adaptation of certain plant populations to insert pollination. He showed that differences in the production of number of pollen grains compared to the number of ovules and differences in the amount of nectar secretion can be used as a measure of adaption.

Dr. J. Sarukhan, Universidad Nacional Autonoma de Mexico, discussed three closely related buttercups with markedly different life histories. He showed that these histories are based on different expenditures of energy on vegetative and reproductive structures by each of the three species and discussed possible types of selection that may have been involved. A very stimulating evening talk by Dr. P. Ehrlich reviewing his research of the population biology of butterflies and, more recently, coral reef fishes brought the Symposium to an end.

Gerrit Davidse
Assistant Curator, Botany Department

NEW SUSTAINING MEMBERSHIP NOVEMBER 1975

Ms. Antoinette O. Bailey

NEW CONTRIBUTING MEMBERSHIP NOVEMBER 1975

Mr./Mrs. John P. Maguire

NEW FAMILY MEMBERSHIPS NOVEMBER 1975

Mr./Mrs. David H. Adolphsen
Mr./Mrs. Thomas F. Aleto
Mr./Mrs. Donald Bachman
Mr./Mrs. Charles J. Bachmann
Mr./Mrs. R. Baer
Mr./Mrs. Armand Bouligny
Dr./Mrs. Richard V. Bradley
Misses Joan and Mary Brucker
Mr./Mrs. Paul A. Bruening
Mr./Mrs. W. Evans Crosby
Mr. Jodie M. Davis
Mr./Mrs. Robert K. Davis
Mr./Mrs. Paul E. Dickinson
Mr./Mrs. Frederick Dierker
Mr./Mrs. Adelbert A. Francis II
Mrs. Estelle Fritsche
Mr./Mrs. Stan Gaa
Mr./Mrs. Louis J. Garr, Jr.
Mr. Steven H. Garten
Mr./Mrs. George S. Gilley
Mr./Mrs. Albert P. Gronemeyer
Mr./Mrs. Tom Hall
Mr./Mrs. Lee Hanley
Mr./Mrs. Charles Harris
Mr./Mrs. Charles Harrison
Mrs. James H. Harriss
Dr./Mrs. Joseph E. Harvey
Mr./Mrs. Peter J. Hitch
Mr./Mrs. C. C. Jen
Mr./Mrs. Carl C. Johnson
Ms. Mary L. Johnson
Mr./Mrs. Thomas B. Keay
Mr./Mrs. K. N. Kermes
Mr./Mrs. Tedd H. Kimelman
Mr./Mrs. Minoru Kimizuka
Mr./Mrs. Kenneth Kraeger
Mr./Mrs. Paul W. Lashly
Mr./Mrs. H. Greig Lindner
Mr./Mrs. George E. Lister
Mr./Mrs. James J. McElwain
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Mr./Mrs. Ralph B. Morris
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Mr./Mrs. James W. Peters
Mr./Mrs. Warren Pouyer
Mr./Mrs. Howard R. Presser
Mr./Mrs. George A. Riddle
Mr. Don J. Riehn
Mr./Mrs. H. J. Schall
Mr./Mrs. George Schelling
Mr./Mrs. Edward H. Schroeder
Mr./Mrs. Eugene Schuchart
Dr./Mrs. H. R. Senturia
Mr./Mrs. Lewis Shilane
Mr./Mrs. Oliver Siegmund
Mr./Mrs. Carl R. Simpson
Mr./Mrs. Buford D. Smith
Dr./Mrs. Dixie E. Snider, Jr.
Mr./Mrs. George H. Stroud
Mr./Mrs. Louis Szewczuk
Mr./Mrs. Harry W. Tretter, Jr.
Dr./Mrs. Ronald Turgeon
Mr./Mrs. Everett T. Walker

NEW INDIVIDUAL MEMBERSHIPS NOVEMBER 1975

Miss Mary A. Abele
Mr. C. E. Bailey, III
Mrs. Helen E. Baird
Miss Marjorie Bandy
Mrs. Robert L. Brereton
Miss Dorothy M. Byars
Miss Jean Canfield
Mr. Ta-Pei Cheng
Miss Patricia B. Connors
Miss Margaretta J. Darnall
Mrs. John O. Dozier
Mrs. Roy H. Eberhart, II
Ms. Emily K. Fast
Mr. Donald H. Gastorf
Mrs. Fred Geyer
Ms. Beth Goyer
Mrs. John P. Gratz
Mrs. R. E. Grissinger
Mrs. Genevieve Hall
Miss Linda Herzig
Ms. Sheila Hill
Mr. Don F. Hoffmann
Mr. David L. Hutchison
Mrs. Berkley Jones
Mrs. Carole Kassouf
Mrs. Walter Knox
Ms. Barbara Lee
Miss Linda Susan Lewis
Miss Virginia L. Lindau
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Mrs. David B. McDougal, Jr.
Miss Bernice McGhee
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Mrs. Christa E. Rariden
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Miss Mary Jo Sawicki
Mrs. Ernest W. Stix
Miss Elizabeth Sutcliffe
Miss Nancy Tennant
Ms. Janet Thompson
Mr. J. Jacob Tillman
Miss Mildred Trotter
Mr. Kevin Tucker
Mrs. Carol Van Fleet
Miss Ersull Vevier
Mrs. Harry J. Viesselman
Mr. Ray K. Walker
Mrs. Adel Ward
Mrs. Ginger Wasyluka
Mr. F. D. Wharton, Jr.
Mrs. Cora Wolf

INCREASE IN MEMBERSHIP CONTRIBUTIONS NOVEMBER 1975

SUSTAINING

Mrs. Richard A. Bullock
Mr./Mrs. Eugene Johanson
Mr./Mrs. Shea Smith, III

FAMILY

Dr./Mrs. Walter Baumgarten, Jr.
Mr./Mrs. Leo J. Berkman
Mr./Mrs. William H. Charles
Dr./Mrs. W. M. Fogarty
Mr./Mrs. Warren Handel
Mrs. C. S. Newhard

NOVEMBER TRIBUTES

In Honor of Mr./Mrs. Ellis Littmann Anniversary
Mrs. Morris Glik

In Memory of Patrick Brennan
Darlene Gene Thornhill

In Memory of Dr. Edwin Eigel
Dr. Armand D. Fries

In Memory of William L. Haarstick
Mary and Grace Gaines

In Memory of Irene Kramer Halsband
Mr./Mrs. William N. Chambers

In Memory of Mr. Charles L. Henne
St. Louis Horticultural Society

In Memory of Margaret Hood
Mr./Mrs. Sam'l C. Davis
Beatrice Thake

In Memory of John William Murphy
Mr. Arthur M. Branch, Jr.
Mr./Mrs. Harvey D. Johnson
Samuel and Barbara Murphy

In Memory of Mr. Theodore E. Storkson
Mr./Mrs. K. M. Aiken
Mrs. Theodore Storkson

In Memory of Mrs. Charles Allen Thomas
Mr./Mrs. Joseph H. Bascom

In Memory of Madeline M. Thomas
St. Louis Horticultural Society

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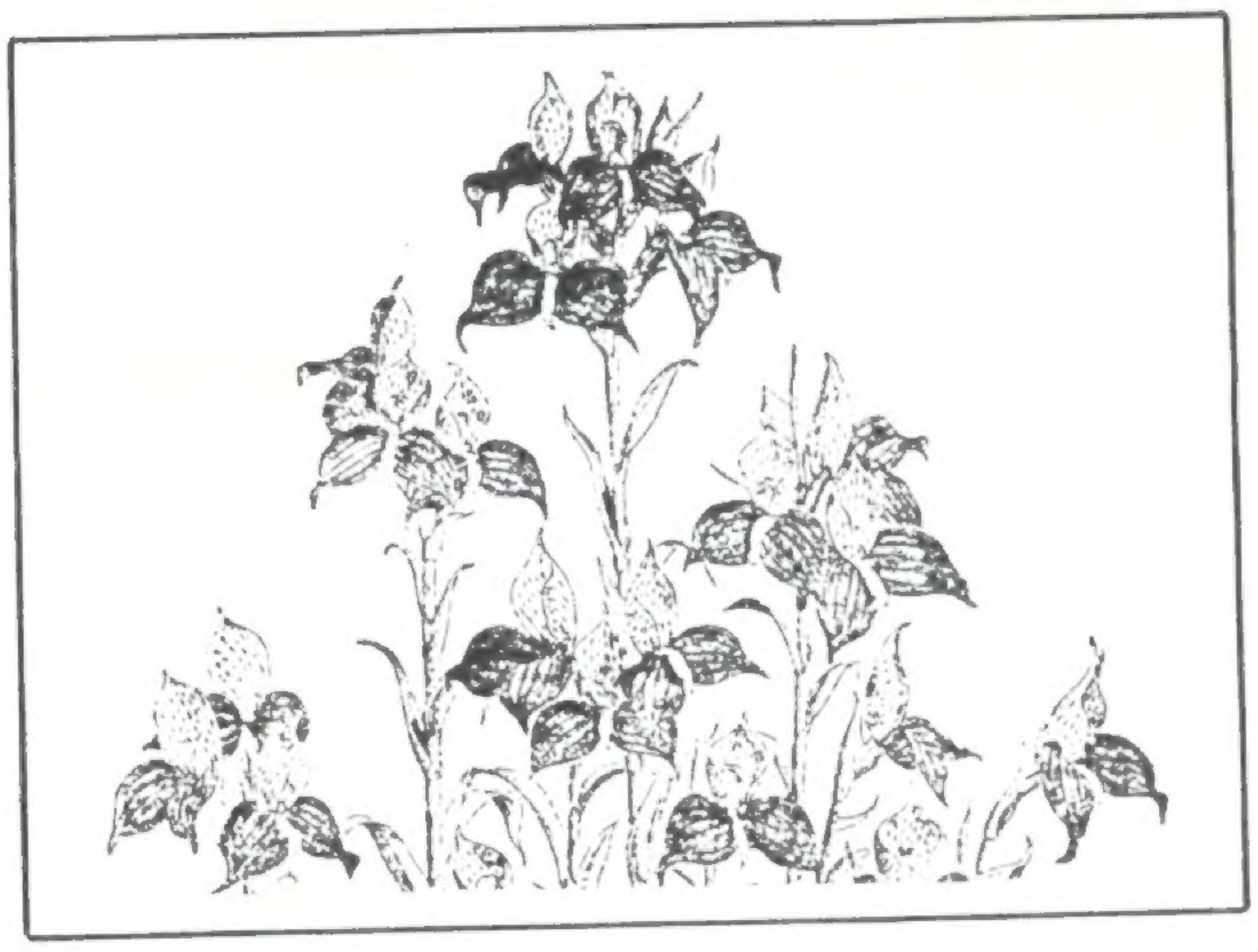

Mediterranean House Opens

The Mediterranean House opened January 10, during afternoon ceremonies presided over by Garden Director, Dr. Peter H. Raven. St. Louis Mayor John H. Poelker cut the ribbon outside the House entrance, after which guests moved inside for a first look at the Garden's newest addition.

Other dignitaries included Father Salvatore E. Polizzi, Associate Pastor of St. Ambrose Catholic Church and Director, Hill 2000, the Italian American organization located in the Garden's neighborhood, and Mr. Henry C. Colteryahn, Chairman, Horizons Theme, St. Louis Spirit of '76 Bicentennial Commission.

For the occasion, cut flowers were specially flown from the Kirstenbosch Botanic Garden, in Cape Province, South Africa, one of the five mediterranean regions of the world.

Sherry and delicacies common to the regions were served to the 200 attending guests as Dr. Raven noted the biblical and historic significance of such plants as: the acanthus which was featured on the Corinthian columns of Greek architecture; the pomegranate, which was figured on the coins of the ancient Jewish state just before it was conquered by the Romans, and again, on the coins of the modern state of Israel.

Dr. Raven also stressed the House as a symbol of the resurgence of the St. Louis area, noting that the building was constructed in 1912 and renovated to its present beauty.

In presenting to Mr. Colteryahn a sprig of laurel, symbolic to the Ancients of victory, joy, and the power of the sun, Dr. Raven linked completion of the Garden's first Bicentennial project to the celebration of the nation's achievements over 200 years.

Other Bicentennial projects are the English Woodland Garden, to be dedicated May 4, and the Japanese Garden, to be dedicated in the autumn.

The Mediterranean House is open daily from 9 a.m. to 5 p.m.

Orchids rely on unique strategies to insure pollination and outcrossing. The cattleya, above, one of the orchids on display at the Garden, is pollinated by a bee. 'Disa uniflora' (top of page) attracts butterflies.

Annual Orchid Show On View In Climatron Through March 16

The orchid, one of the strangest and most exotic of flowers, has endured centuries of uninterrupted popularity and is a central attraction at the Garden during the annual Orchid Show, on view now through March 16.

From opaque blossoms less than a millimeter in diameter to the familiar purple cattleyas (corsage variety), orchids, striking in their diversity, will be featured in the Climatron where the steamy climate simulates the jungle environs of many orchids.

A tough, exceedingly common plant, the orchid is considered a beautiful weed in many parts of the world. Its reputation as a difficult and temperamental plant "is unwarranted," said Marion Pfeiffer, the Garden's chief orchid grower, who has nurtured the Garden's rare

Continued on next page

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collection for 28 years.

The Orchidaceae (Orchid family) is an extremely successful and advanced plant family. With perhaps 30,000 species, it is the largest of flowering plant families — accounting for nearly a tenth of all the earth's plants. This year's show will feature over 300 varieties of orchids, many of which are rare and not known to be cultivated in any other botanical institution.

Orchids, many of which are epiphytes (relying on the atmosphere rather than soil for water and nutrients), are found on every continent except Antartica; in high mountainous regions as well as in the treetops of tropical forests. The Lady Slipper, *Cypripedium calceolus,* with its pale yellow flowers, is an orchid native to Missouri. Another peculiar species from Western Australia, named *Rhizanthella gardneri,* grows and blooms entirely underground.

'Great Impersonators'

Some of the 1000 orchid plants on view throughout the Orchid Show are great impersonators in the wild, depending upon their natural disguises for survival. One incredible deceiver is the Mediterranean orchid, *Ophrys speculum,* whose appearance and scent so closely mimic a female wasp as to attract its specific pollinator, the male wasp. While attempting to mate with the orchid, the male wasp picks up pollen masses which are eventually deposited on another orchid.

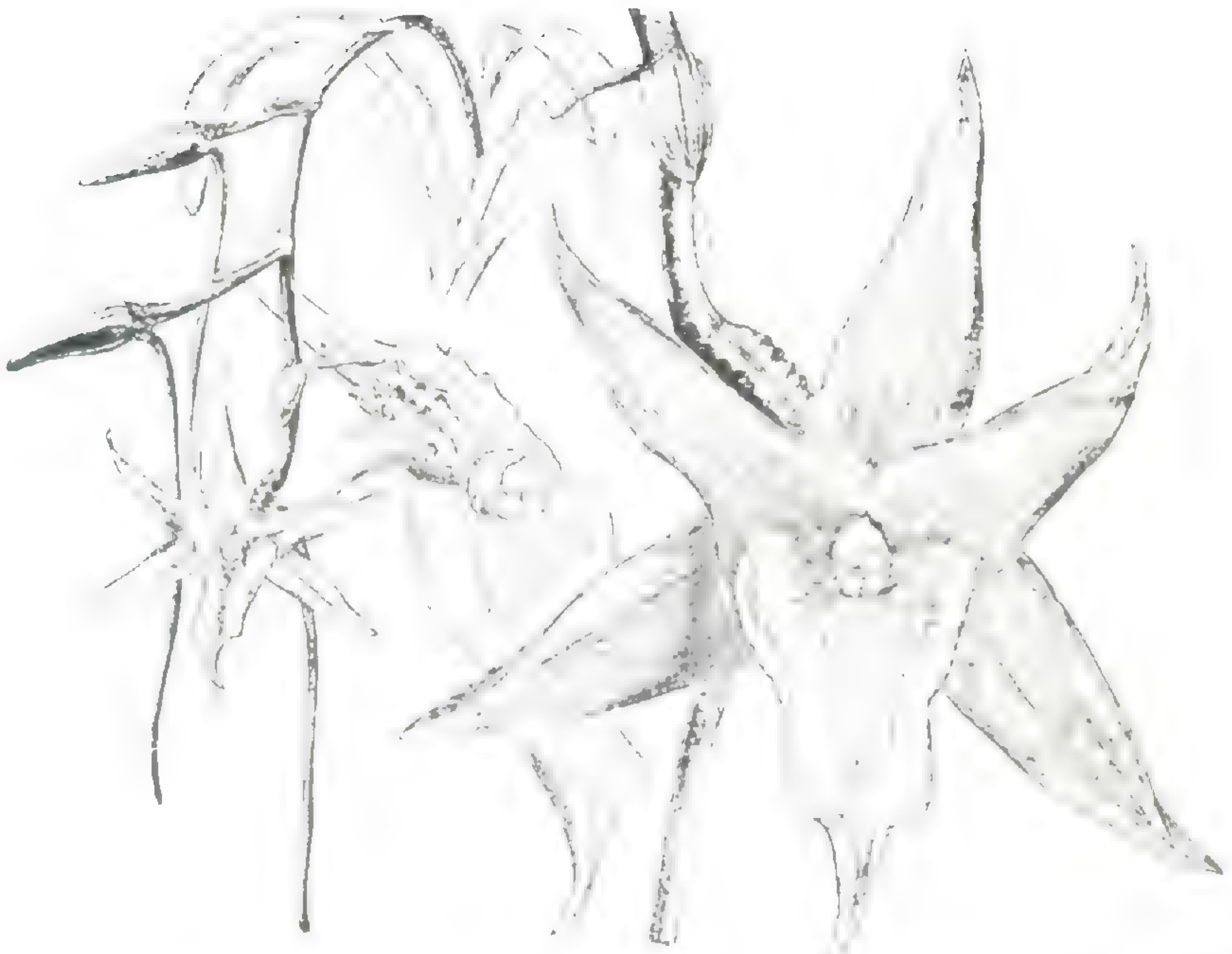
Through millenia of evolutionary refinement, the fluttering yellow petals of the orchid dancing girl *(Oncidium),* resembling butterfly's wings, enable it to attract attacking bees for the task of pollination. This orchid will be on view during the Show. Another fortunate case of mistaken identity involves the fringed Australian orchid, *Calochilus robertsonii,* whose close resemblance to a caterpillar enables it to attract hungry wasps searching for caterpillars which are their chief prey.

Dr. Charles Huckins, curator of tropical plants, attributed a portion of the orchid's success throughout the world to its sophisticated pollinating mechanisms which insure outcrossing by attracting insects through a variety of strategies.

'Strategies of Attraction'

In addition to appearance, orchids also utilize color, fragrance, and structure to attract pollinators. In some instances, the orchid's lip petal facilitates pollination by serving as a type of landing platform for the insect.

Still other orchids possess complex traps or mazes which guide pollinating insects past the plant's pollen sacs. Unless pollinated, the plant fails to develop the millions of minute ovules contained within the ovary. After pollination, however, the millions of dustlike seeds are eventually released and may travel long distances before coming to rest. After invasion by a nutrient-rich fungus, the seed begins a five to ten year growth period culminating in the plant's first bloom.



***Angraecum sesquipedale*, the famous orchid which puzzled Charles Darwin, relies upon a night-flying moth to insure pollination.**

A white orchid, native to Madagascar, with a foot-long spur, attracts night-flying moths which possess a tongue long enough to extract nectar from the spur's extreme tip. In the 19th century, Charles Darwin predicted the existence of this insect after deducing that only "some moth with a wonderfully long proboscis," capable of reaching the nectar would serve as the plant's pollinator. Years later, such a moth was discovered and fittingly named *Xanthopan morgani praedicta.*

***Paphiopedilum* 'Rainbow' is fly-pollinated.**

Even before the ancient Greeks first took notice and named the plant, orchids have captivated man's attention. The Garden's annual Orchid Show is a testimony to this fascination and offers a first hand opportunity to view the unsurpassed beauty and mystique of the orchid.

Ann Patrice Ferrigan, Staff Writer

SPRING GARDEN WORKSHOP ON MARCH 6 AND 7

In response to an increasing demand for information on gardening projects of a practical nature, a Spring Garden Workshop will be held in the Floral Display House, on Saturday, March 6, and Sunday, March 7. Sessions will be from 11 a.m. to 4:30 p.m. on Saturday and from noon to 4:30 p.m. on Sunday. Admission for Garden members is free.

The workshop will provide information on a variety of topics, including: how and when to prune trees and shrubs; seed sowing and planting; container growing of vegetables in limited space areas; and the best vegetable varieties to grow in St. Louis.

There will be approximately two dozen booths set up by the Garden staff, horticultural societies, and commercial gardening firms, where on the spot spring gardening advice will be given. Director of the workshop is Robert Dingwall, Chief Horticulturist.

BOXWOOD SOCIETY OF THE MIDWEST BEING FORMED

The Boxwood Society of the Midwest is now being formed. Membership is open to anyone interested in learning more about the plant and how to grow it in the Midwest.

Headquarters of the new society will be at the Missouri Botanical Garden, 2345 Tower Grove Avenue, St. Louis, Mo. 63110. Many of its activities will be associated with the Edgar Anderson Memorial Boxwood Garden to be installed at the Garden with planting scheduled to begin in 1976.

The society's first meeting will be held at the Missouri Botanical Garden in early March of 1976. At this meeting the organization, purpose and beginning plans of the society will be outlined. The representative program will include a presentation of the comprehensive plan of the Edgar Anderson Memorial Boxwood Garden which was designed by Karl Pettit III of Eugene J. Mackey and Associates in consultation with Mrs. Harriet R. Bakewell, landscape architect.

Anyone interested in learning more about the society and in receiving a notice of the founding meeting may write to either of the following: Mrs. D. Goodrich Gamble, 23 Bon-Price Terraces, St. Louis, Mo. 63132 or Mrs. George E. Penhale, 316 Carson Road, Ferguson, Mo. 63135.

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M. P. CRONIN, Editor

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$5.00 per year. $6.00 foreign.

My Valentine
I greet Thee

EXHIBIT OF ANTIQUE VALENTINES AT TOWER GROVE HOUSE THIS MONTH

An exhibit of antique valentines owned by Mr. Edwin W. Henderson, a nationally known collector, is on display during February at Tower Grove House.

The Henderson Collection has never before been exhibited to the public and the fifty valentines on view in the first and second floor display cases of the House date back to the 1840's.

Included in the exhibit are mechanical valentines, free standing and box valentines, comic (penny dreadfuls) and sentimental valentines, and booklets of verse. The greetings, most of them handmade, were designed and printed chiefly in England, Germany and the United States.

Current hours for Tower Grove House are from 10 a.m. to 4 p.m. daily and weekends. Admission is free to Members.

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FEBRUARY GARDENING

Plans should now be well under way for what is to happen in the garden this coming season. Gardens in public areas will take on renewed significance this Bicentennial year. Red, white, and blue will be prominent garden colors and there will be a great variety of plant material to choose from. Early planning and ordering will prove profitable. Over 200 new varieties of plants are being offered this spring but care should be exercised in choosing the appropriate plant varieties that will flourish in your garden area.

Early vegetables that prefer cool weather can be planted outdoors as soon as the soil can be worked. These include: peas, lettuce, onions, parsley, and spinach. Flower seeds can also be directly sown if soil is ready, especially, Shirley poppies, larkspur, sweet peas, and snapdragons.

Dormant Spray

Dormant spray should be applied beginning this month when the temperature will not drop below 40 degrees for 24 consecutive hours. Use dormant spray especially for scale on euonymus and oaks, and for oyster scale on lilacs. Oil spray should be used only once a season and container directions should be followed carefully. Dormant spray does not harm birds.

Chickweed

With warm days this month, the chickweed will be actively growing; so now is the time to use a recommended herbicide in order to control the weed before it sets seed and spreads further. Thin areas in the lawn may be lightly raked when warm weather permits and lawn seed applied as grass will grow better during the cooler, early spring months. A 6-12-12 fertilizer may be applied this month to stimulate the grass into growth.

Insect Damage

Check house plants for signs of insect damage and spray if needed. Avoid using fertilizer on house plants until they show signs of active growth. This is a good time to repot plants that need it but avoid overwatering until new roots are well established. Washing leaves under the shower or with warm milk will remove winter dust and help your plants get off to a better start.

Orders for vegetable and flower seed should be placed as soon as possible. Growing mediums and containers should be prepared and ready when the time comes to start seed sowing and transplanting indoors. Do not start seed too early; see that there is plenty of light to allow seedlings to develop properly. Low light will cause seedlings to stretch and become spindly. Feed seedlings with liquid fertilizer but use caution so as not to burn them.

Geranium cuttings can be made this month. Let the cuttings lie on a shelf or table for a day so they can heal over on the cut end before being placed in a rooting medium. Avoid keeping too wet in the early rooting stages.

Fruit trees and grapes may be pruned on mild days to remove excess wood and to shape the plants. Place orders for new trees if needed and when they arrive, plant immediately and mulch well.

Birds

Remember your friends, the birds, and see that feeders are well stocked as they depend upon this source of feed to carry them through the cold days to come.

A point that needs to be stressed often, is the need to continually improve your growing areas in the garden, with the use of compost in the form of partially rotted plant refuse or animal manures. Compost should be added to the soil after each crop and again in early spring, when preparing for new planting. If using fresh animal manure, it should be used more sparingly and worked well into the soil prior to planting. Animal manure that has sat outside, in most cases has much of the nutrients leached out by rain, and therefore can be used in heavier quantities as it is more like compost.

Plenty of compost in the soil also means less fertilizer is needed, and less watering as it holds more moisture. Lime should not be added on a regular basis, unless indicated by a soil test. Overliming can raise the P.H. of the soil (sweeten it) too high, which in turn can cause some of the elements to be rendered unavailable to the plants. A soil test should be taken if there is any question of just what should be added, or on areas where problems have occurred over the past year or so.

Soil Samples

In taking soil samples for testing, use a clean trowel, and, with a plastic container, proceed to the trouble area. Samples of soil should be taken from several spots if the area is fairly large, and should have a portion of soil removed to at least 6 inches in depth. The samples should be thoroughly mixed with the trowel and not your hand, then about one pint should be placed in a plastic bag. This is placed in a small box, along with a check for $2.50, made out to the University of Missouri Extension Division, and mailed to the Extension Division, 555 South Brentwood, Clayton, Mo. 63105. Allow 4 to 6 weeks for this service.

Robert Dingwall
Chief Horticulturist

MEDITERRANEAN HOUSE OPENING

Mediterrane
House

DR. CROSBY ON EXPEDITION IN SOUTHERN CHILE

Marshall Crosby, Chairman of the Garden's Botany Department, is in Southern Chile collecting mosses with Dr. John J. Engel of the Field Museum of Natural History, Chicago.

The joint expedition, being conducted during January-February, 1976, is funded by a grant from the National Geographic Society and concentrates its collecting activities in the "Valdivian" region which extends from about 38° south to 48° south. The mosses and liverworts of this area of Chile have not been extensively collected, and additional investigation should uncover many interesting species. Dr. Crosby will concentrate his efforts on collecting mosses, while Dr. Engel will concentrate on liverworts.

AFRICAN VIOLET SOCIETY SHOW TO BE PRESENTED FEBRUARY 28-29

"Violets Salute the Bicentennial" will be the theme of a two-day flower show sponsored by the Metropolitan St. Louis African Violet Society.

Varieties of African violets, gesneriads, terrariums, and artistic plantings will be displayed in the Garden's Floral Display House, Saturday, February 28, 2-5 p.m., and Sunday, February 29, 9 a.m. — 5 p.m. Society members will be present during the show to answer questions and leaf cuttings from many of the ribbon-winning plants will be available for sale.

The Plant Shop, located in the Floral Display House, will also be featuring violets and related gesneriads for purchase.

Proceeds From Sale of J.A.C.L. Cookbook Will Benefit Japanese Garden

The Japanese American Citizens League cookbook, titled *Nisei Kitchen,* has been reprinted a second time because of its popularity and is now available at the Garden Gate Shop.

The League's Board of Directors has announced that the major portion of proceeds from the sale will be donated to the Japanese Garden as part of the League's endeavor to preserve Japanese heritage and culture for future generations.

Priced at $4.50, *Nisei Kitchen* is a compilation of Japanese and Chinese recipes along with an explanatory text of Oriental food customs and menus.

Garden's Orchid Collection Among Topics At Plant Conservation Conference, Royal Botanic Garden, Kew, England

The role of Botanic Gardens in providing appropriate environments for endangered plant species was among the topics covered at a NATO-sponsored Plant Conservation Conference held at the Royal Botanic Garden, Kew, England, in September, 1975. The Missouri Botanical Garden orchid collection was a part of a paper delivered at the Conference.

Since it is becoming more and more difficult to conserve vegetation in its natural habitat, an increasing burden and challenge falls to Botanic Gardens to preserve and cultivate rare and endangered plant species.

Paper Presented By Dr. Raven

Papers presented during the week-long Conference which was attended by 150 botanists, horticulturists, and Botanic Garden administrators, related to this general theme such as: The Global Problem of Conservation; Botanic Gardens and Public Education; and Techniques of Plant Cultivation (including a paper by Dr. Peter H. Raven, Garden Director, who participated in the Conference).

An area critical to the task of conservation is that of documentation or indexing of plant collections. Unless individual plants are systematically recorded, it is impossible for Botanic Gardens to evaluate their collections for the purposes of cultivation, exchange, and conservation of rare and endangered species.

Dr. Matthias Hofmann, a delegate from Konstangz, Germany, presented a research paper which illustrated one such computerized indexing system for a special group — the Orchidaceae (Orchid family). Data for some 17,000 orchid specimens was collected from 55 institutions, the Missouri Botanical Garden among them.

Index of Cultivated Plants

In order to maximize the potentialities of Botanic Gardens in conservation, says Dr. Hofmann, "it is necessary to know which species are already in cultivation and how frequently a particular species is cultivated in order to rationally assess which species should be provided with costly culture-places. With this information, one can prepare an index of cultivated plants that can be compared with a list of threatened plants in order to determine which species ought to be brought into living plant collections."

Dr. Hofmann's computerized index system allows the computer to answer such questions as: the names of species cultivated in a particular collection; and which collection contains species not cultivated elsewhere.

Cattleya bowringiana *f.* **alba**, *one of 105 rare species of orchid cultivated at the Missouri Botanical Garden.*

Included in the Hofmann study were 700 known species cultivated at Missouri Botanical Garden, of which 105 are found at no other institution in the study. One such species is *Cattleya bowringiana f. alba* (see photo). The "alba," or white form of this orchid is extremely rare, being a pure opaque white with a delicately colored yellow and lavender throat. This plant was found in 1971, in Belize, Central America, by Dr. Aspinwall. Being a zoologist, he did not distinguish it from several other "common" orchids which he donated to the Garden. Only after it came into flower, was it discovered to be such a special addition.

Just as we have been able to document our collection of orchids included in the Hofmann study, in recent years dramatic progress has been made in recording our other collections so that we may participate more fully in such critical conservation efforts.

We have, for example, been able to index the 1250 different taxa in the Climatron, the materials in all other completed glass houses, several hardy plant nurseries (containing materials newly-introduced from Japan) and are now completing the recording of the grounds collection.

As Dr. Hofmann points out, with this kind of knowledge it will be possible to economically plan conservation oriented collections in Botanic Gardens throughout the world and thereby have substantial reason to hope for an increased ability to preserve and maintain plants of scientific and aesthetic value.

Judith Huhn, Plant Recorder

DR. HENRY ANDREWS RETIRES

Dr. Henry Nathaniel Andrews, former Paleobotanist at the Garden and Dean of the Henry Shaw School of Botany at Washington University, recently retired from academic life at the University of Connecticut, where, for the past 10 years he headed the University's Department of Botany.

Dr. Andrews came to St. Louis in 1935 after receiving his B.Sc. degree from the Massachusetts Institute of Technology. In 1939, he received his doctorate from Washington University.

While in St. Louis, both Dr. Andrews, and his wife, Elizabeth ("Libby"), were active supporters of the Garden. Visiting scientists and Washington University students were always welcome at their Webster Groves home where the Andrews encouraged a relaxed interchange of ideas.

Dr. Andrews' reports on his various field trips and fossil hunting expeditions were among the Garden's most popular lecture series, usually delivered to enthusiastic, standing room only audiences.

Early photograph of Dr. Henry Andrews.

Recently elected to the U.S. National Academy of Sciences, Dr. Andrews is greatly respected throughout the country as a preeminent paleobotanist.

The Andrews now reside in Laconia, N.H.

Hugh Cutler, Curator of Useful Plants

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In Memory of Mr. Adolph H. Rosenberg
Mr./Mrs. Meyer Levy

In Memory of Mr. Norman E. Schaumburg
Mrs. Norman Schaumburg

In Memory of Estella (Stella) Schmidt
Mr./Mrs. Edward Heickelbech

In Memory of Mr. Geo. F. Schwenk
(Grandfather)
Penelope S. Billman

In Memory of Mr. Sydney Shoenberg, Sr.
Mr./Mrs. Joseph H. Bascom
Mr./Mrs. Tom K. Smith, Jr.

In Memory of C. Jackson Spalding
Dogwood Garden Club

In Memory of Sgt. Joseph B. Thomas, Jr.
Dr. Peter H. Raven
Mr. Tom K. Smith, Jr.

In Memory of Mr. Thomas M. Webster
Mr./Mrs. Harry Wuertenbaecher, Jr.

In Memory of Mr. Kelton E. White
Mr. Sam'l C. Davis

In Memory of Mr. Jonn G. Woods
Mrs. E. S. Mallinckrodt

MISSOURI BOTANICAL GARDEN BULLETIN
2345 Tower Grove Avenue
Saint Louis, Missouri 63110

SECOND-CLASS
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PAID
AT ST. LOUIS, MO.

April

Missouri Botanical Garden Bulletin

Spring Flower Show Opens March 20

Annuals, perennials, trees and shrubs of every description will be on view during the annual Spring Flower Show beginning March 20 and running through April 18 in the Floral Display House.

The Members preview party, "Spring Promenade," featuring an overview of Spring fashions and sponsored by Stix Baer and Fuller Co., will be held Friday, March 19, from 5:30 to 7:30 p.m. During the event Members and their guests may browse for gifts in the Garden Gate Shop and the Plant Shop, where primrose and other spring flowers will be available for purchase.

Among the featured attractions at the show this year will be a rose garden containing 40 different varieties of tree roses and hybrid tea roses, ranging in color from white to deep maroon.

In addition, Jim Rhodes, greenhouse superintendent, reports that large displays of hyacinths, tulips and daffodils will be intermixed with flowering Kwanzan, Quince, Almond and Dogwood.

Prairie Tour Scheduled By Arboretum

A two day "Spring Prairie Tour" will be conducted May 8 and 9 in the vicinity of El Dorado Springs, Mo., where several excellent prairie ranges are located. The tour, presented by the Garden's Arboretum, is the first of an anticipated series of short natural history expeditions to interesting locales within Missouri.

Scheduled stops on the tour include a sunrise visit to the Taberville Prairie "booming" grounds to view the spectacular mating display of the prairie chickens.

Tour participants will leave St. Louis by bus on Saturday morning and return by 9:00 p.m. Sunday evening. Cost for Members is $32 and includes transportation, lodging, and three meals. Payment in advance is necessary to hold reservations. For further information, contact Dave Goudy, Arboretum Superintendent, 772-7600, Sta. 81.

The magnificent Suwa lantern lends stately presence to the tranquil setting within the Japanese Garden. The stone lantern is the gift of St. Louis's sister city of Suwa, Japan. In September, 1974, a delegation from Suwa, which included the city's Mayor, Setsuji Iwamoto, participated in ground breaking ceremonies at the Japanese Garden.

Spring Lecture Series

A seven part series of Spring lectures will be presented during March and April for Garden Members and their guests. The lectures will be given in the John S. Lehmann Building auditorium at 10:30 a.m. and 8 p.m. (or as specially indicated).

The presentations will be by Garden staff members and two special guest lecturers. Mrs. Frances Perry, member of the Council of the Royal Horticultural Society, will speak on April 1 and 2. Her lecture is presented through the efforts of the Garden Club of St. Louis and the Ladue Garden Club. Dr. John L. Creech, Director of the United States National Arboretum, will deliver two separate lectures on April 14.

Continued on next page

Volume LXIV Number 3
March 1976

Crane Island Dedicated

Crane Island, the second largest of three islands within the Japanese Garden, was recently dedicated during afternoon ceremonies attended by 100 guests including members and officers of the National Council of State Garden Clubs, and the East Central District, Federated Garden Clubs of Missouri.

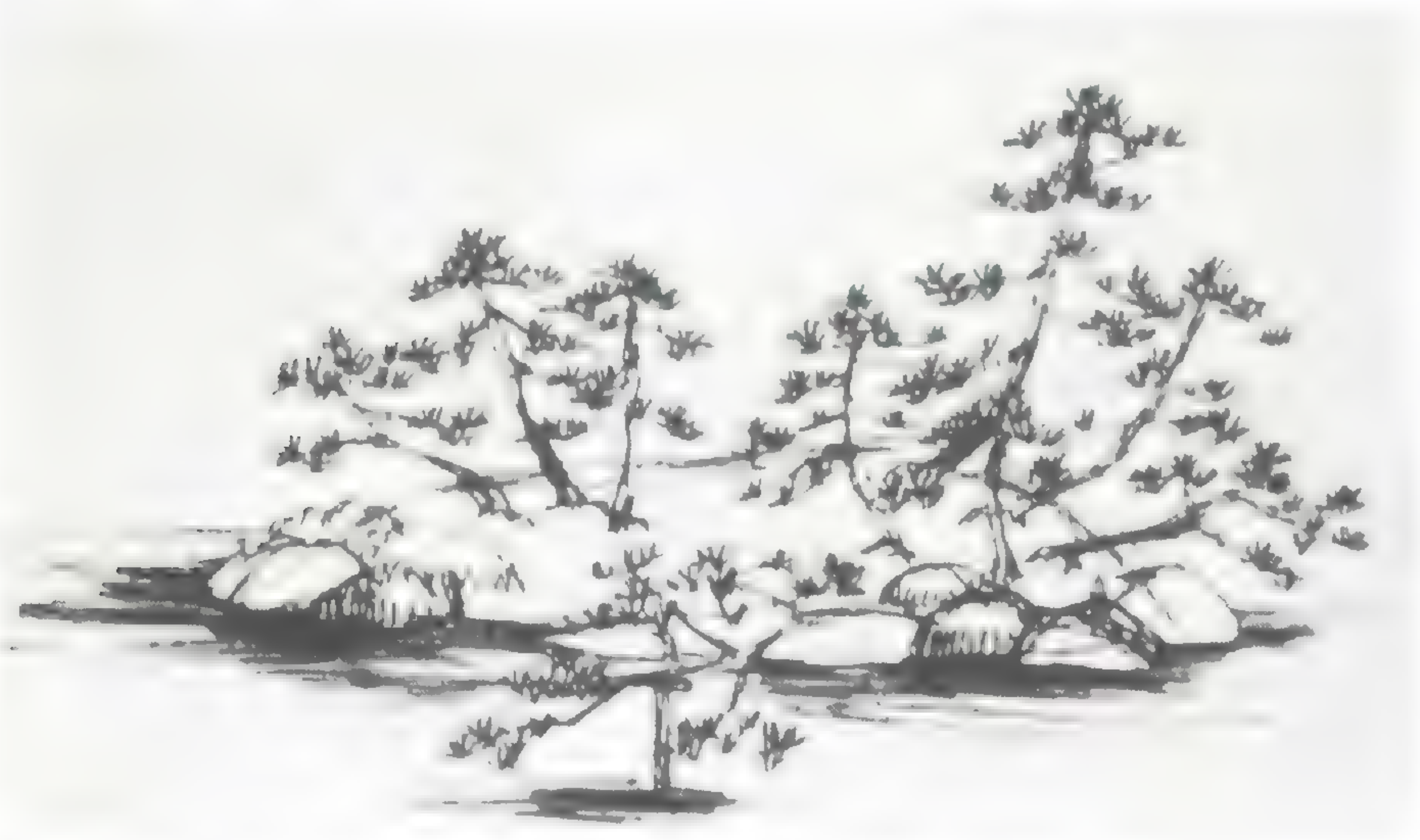
The crane-shaped island was the gift of the East Central District, an organization composed of 160 garden clubs throughout the St. Louis area. Private donations by member clubs enabled the East Central District to contribute $3500 for the development of the island.

During the ceremonies, held at the National Council's headquarters, 4401 Magnolia Ave., St. Louis, a plaque commemorating the Island's dedication was presented by Mrs. John A. Secrist, president of the East Central District, to Dr. Peter H. Raven.

In accepting the Island on behalf of the Trustees, staff and membership, Dr. Raven noted the "close and long lasting relationship that is at once natural and mutually beneficial" between the Garden and the East Central District.

Dr. Raven said the crane, within Oriental lore, is symbolic of happiness and good fortune. "Like the mythical phoenix of legend," he added, "the rising of this island within the Missouri Botanical Garden reflects the resurgence within the community and heightens out anticipation of the Japanese Garden's dedication this Autumn as a Bicentennial event."

Dr. Raven accepting commemorative plaque from Mrs. John A. Secrist during dedication.



Designer Koichi Kawana's sketch of Crane Island.

Mugho and bonsai pines atop the island measuring 120′ X 75′.

LECTURES: FROM PAGE ONE

Following is the complete schedule:

Wednesday, March 24 — 8:00 p.m.
"South African Flora"
(accompanied by film,
"On The Third Day")
Dr. Peter Goldblatt,
B. A. Krukoff Curator of
African Botany
Missouri Botanical Garden

Thursday, April 1 — 8:00 p.m.
and
Friday, April 2 — 10:30 a.m.
"The Two Way Switch: The
English Influence on American Gardens and
the American Influence on English Gardens"
Frances Perry, Member, Council of the
Royal Horticultural Society, England

Wednesday, April 7 — 8:00 p.m.
"Gardens of Imperial Russia"
Tamra Engelhorn Raven

Wednesday, April 14 — 10:30 a.m.
"Exploring For Plants"
Dr. John L. Creech, Director,
United States National Arboretum
Washington, D.C.

Wednesday, April 14 — 8:00 p.m.
"Botanical Gardens and Botany in China"
Dr. John L. Creech

Wednesday, April 21 — 8:00 p.m.
"The Mountain Gorilla: Nutrition and Habitat"
Dr. William D'Arcy, Research Botanist,
Missouri Botanical Garden

Wednesday, April 28 — 8:00 p.m.
"Our Vanishing Flora"
Dr. Peter H. Raven, Director,
Missouri Botanical Garden

Trustees Approve New Garden Fees, Expanded Membership At $25

The Board of Trustees, at its January 21st meeting, approved increases in the Garden's gate admission fees, effective March 1. In announcing the increase, Dr. William M. Klein, Assistant Director, noted that the development of such new features as the 12-acre Japanese Garden and Mediterranean House, in addition to continuous introduction of new plant specimens and restoration of historical artifacts, have generated higher maintenance and production costs.

The new gate admission prices are: adults $1.50; and children 50¢. The new fees represent the first increases in admission since April, 1972.

Membership Changes

Changes in the annual memberships to the Garden, designed to reflect the increased benefits and services to Garden Members, have also been approved. The $25 membership category has been expanded and will include admission privileges for two individual adults and accompanying children under age 21.

The Board of Trustees also has announced the creation of two new annual support levels: Directors Associates, $500; and Henry Shaw Associates, $1,000.

MEMBERS
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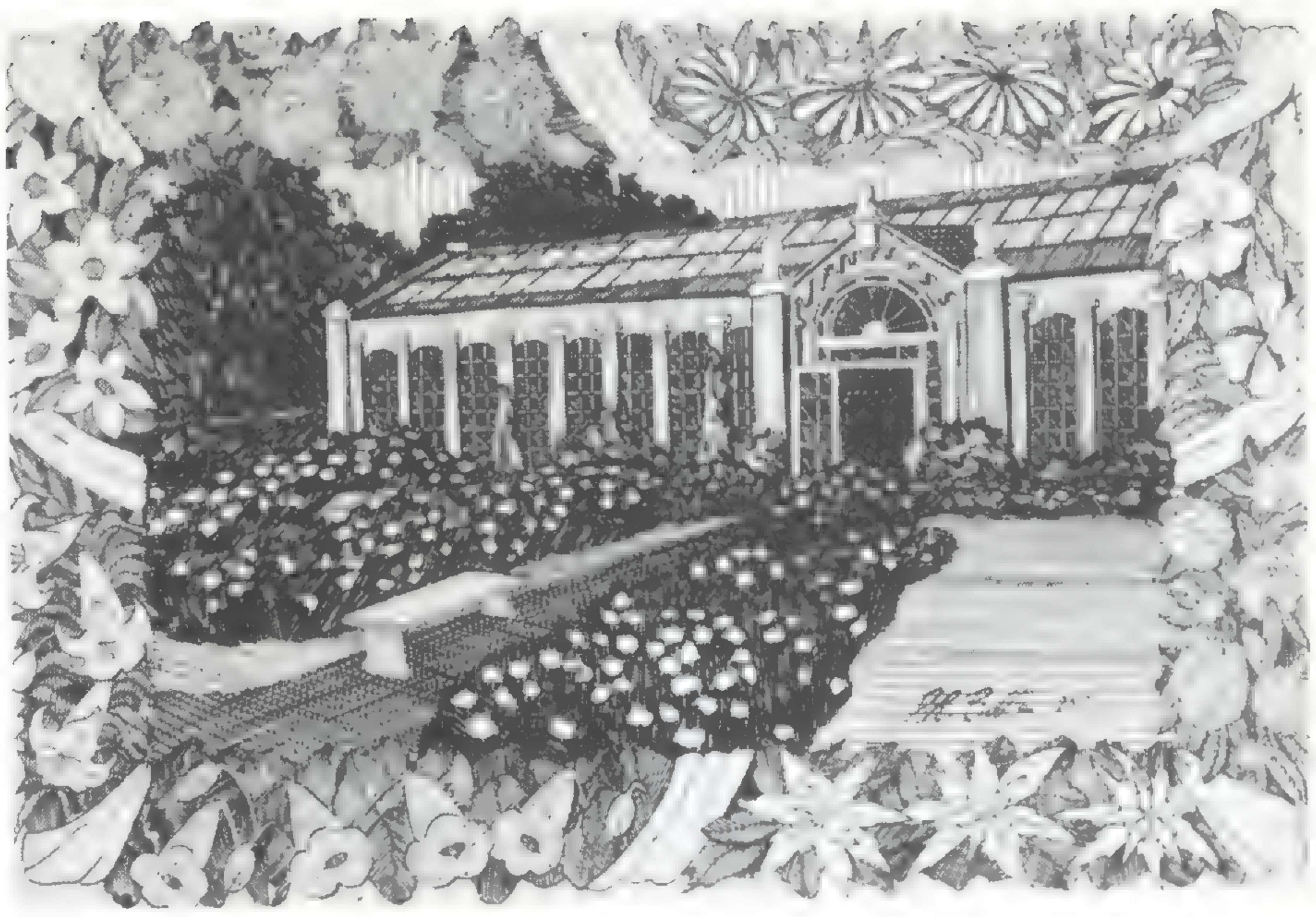
Mark your calendars now! On August 26, a special Bicentennial tour for Garden Members will travel the "Colonial America" trail. Again, as last year, the arrangements will be operated by Tauck Tours. For those Members familiar with Tauck no explanation of the quality of their operation is needed — for those of you unaware of Tauck, it is, in simple terms, the finest tour operation in the United States. The itinerary includes: New York; Philadelphia (including a stop at fabulous "Longwood Gardens"); Annapolis; Jamestown; Williamsburg; and Washington D.C. The group will return to St. Louis on September 2.

Due to the immense popularity of last year's Tauck Tour to New England and Eastern Canada, we urge you to obtain full information (telephone 314-567-9811 and ask for the Travel Service) regarding reservation procedures, deposits, etc. just as soon as possible.

This trip will be outstanding in every way. Don't miss an opportunity to see the historic landmarks of our country at such an appropriate time.

Sally Schiller
Executive Secretary
Members of the Garden



Line drawing of historic Linnaean House is reproduced on note cards which are on sale at the Garden Gate Shop.

Garden Gate Shop Spring Line

The new Spring line of gifts at the Garden Gate Shop has arrived and includes such unique items as bonsai gardening tools, from $8 to $18, indoor coldframes, priced at $10, and paperweights of dried flowers or miniature bouquets in acrylic blocks, priced from $8 to $125.

The Shop is also abloom with an expanded selection of garden scene watercolors, framed wildflower prints, and single flower sketches which are available in many colors and styles, ranging in price from $8 to $40.

New varieties of stationery and note cards are in good supply, including every day notes by St. Louis artist James Riddle, which depict the Garden's Linnaean (Camellia) House. Riddle has been acclaimed for his line drawings of historic St. Louis homes and landmarks. The Linnaean notes are printed in green and priced at $3 for a packet of 10. Members receive a 10 percent discount on all purchases.

Sets of glasses and dessert plates, cache-pots, wrapping paper and ribbons are decorated with a variety of floral and garden patterns. Dyed and natural colored straw baskets, from $35 up, are now on sale at a 50 percent discount.

The MISSOURI BOTANICAL GARDEN BULLETIN is published 11 issues per year monthly except August, by the Missouri Botanical Garden, 2345 Tower Grove Avenue, St. Louis, Mo. 63110. Second class postage paid at St. Louis, Mo.

M. P. CRONIN, Editor

SUBSCRIPTION RATES:
$5.00 per year. $6.00 foreign.

The December, 1975 issue of The Missouri Botanical Garden completed Volume LXIII. The issues of January and February, 1976, are Number 1 and Number 2 of Volume LXIV. This issue, March, 1976, is Number 3 of Volume LXIV.

Gardening in St. Louis

MARCH GARDENING

Outdoor garden activities start back into full swing this month as the weather turns warm. It is important not to remove mulches too soon; invariably, as the month progresses, it will become extremely cold so mulches should be left in place until all danger of heavy frost is past. Pruning of roses should not be done until the middle of next month. We all recall the severe late frost, two years ago, which killed many plants. Much of the damage could have been avoided if mulch had been left in place.

Tree and Shrub Planting

Planting of trees, shrubs and roses can begin as soon as the ground can be worked. The earlier bare root stock goes in, the better. Cool vegetable crops should go in as early as the ground can be worked. Many of these were planted at the end of last month. Cool vegetable plants started indoors should be hardened off 7 to 8 days prior to planting outdoors permanently. Protect them from the sun the first day or two by shading them with newspaper or with shingles.

Garden Clean Up

Cleaning up the garden is important; the removal of all dead debris that accumulated late last year and the removal of weeds (especially chickweed which was growing actively earlier) should be complete before the seeds have a chance to reinfect the ground again.

Vegetables and annuals which will not stand frost may be started from seed indoors 6 to 8 weeks before planting outside. Mid-March is a good time to start many of these. Be sure that your containers are clean and that you use a special prepared mix that is weed and disease free. Seedlings should be kept in a uniform temperature of 70 to 75 degrees and given as much light as possible as soon as they start to germinate. If growing under artificial light, see that the plants are kept as close to the light as possible to prevent stretching.

Most vegetables and annuals which are started indoors are ready for transplanting from the seed pan approximately two weeks after sowing.

Dormant oil sprays should be applied immediately if not already used by this time. These sprays should go on before the buds have a chance to swell. No other material is needed other than the dormant oil itself. It is important to spray the plants thoroughly to the point of runoff. This is not harmful to your soil, your animals, or to human beings but is instrumental in eliminating many of the early spring insects that have been overwintering on your trees and shrubs in either egg or larvae stage.

Geranium Care

Geraniums that were lifted from the garden last fall and over wintered in the basement or cool sunroom now need good attention if they are to flower well this coming season. Plants should be cut back heavily, replanted into larger containers if needed and watered increasingly as the plants begin to grow. Once the plants are growing actively, it is important to feed on a regular basis with a good liquid fertilizer; follow the directions carefully on the label and apply every 10 to 12 days.

Old plants, if growing actively, can have cuttings taken from them. Cuttings of geraniums should be allowed to sit on the table for 24 hours before putting into the rooting medium. They will root more successfully this way. Once the plants are rooted 12 to 14 days, pot up in a light growing mediums, and place where they get plenty of light. You should have good flowering plants in 4 inch pots by mid-May.

Containers for outdoor plants should be prepared now before you are too busy. Many of the containers will need repainting and cleaning after last year's use.

Lawn Work

This is the ideal time for lawn work. Refer back to earlier Bulletins from previous years to see that lawn areas are cleaned up, redug, plenty of organic matter worked in and sown with good seed. Most grasses do best in cool weather so the earlier your seeds are planted, the earlier your lawn will become established. Keep the soil moderately moist until the seed is well germinated as this is essential. Use lime sparingly and only if soil tests indicate that it is needed. Over liming can be harmful to your grass. Applying once every three to four years is usually sufficient for best results.

Under trees, and semi-shaded areas where it has been difficult to grow grass, you might consider eliminating the grass and coming in with ground covers which are much easier to maintain and require considerably less work.

In selecting vegetable seed for the first time, make sure that the varieties selected are of hybrid vigor indicated by an F_1 following the variety and also that they are as disease resistant as possible; this is particularly important with tomatoes here in the St. Louis area.

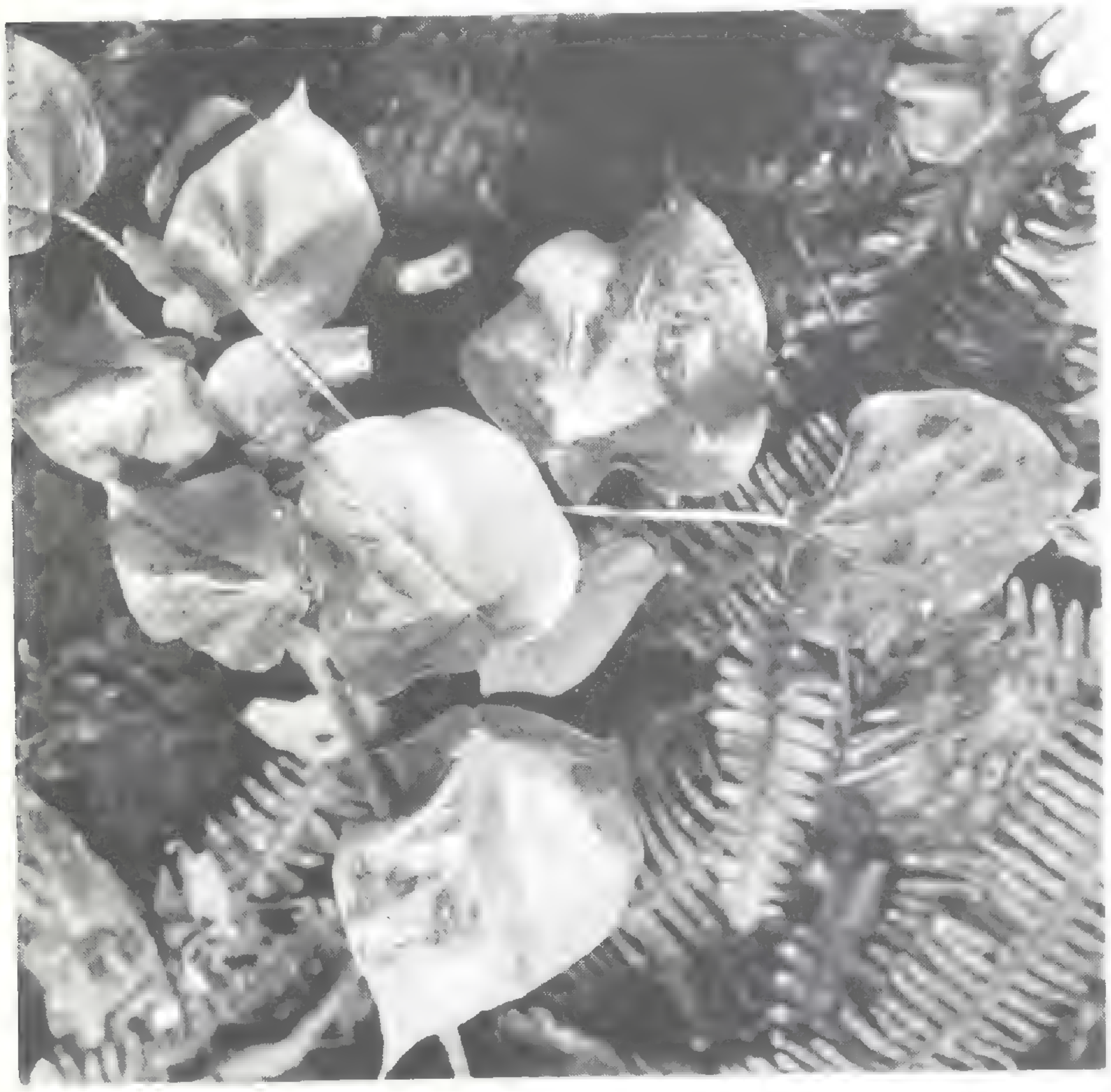
Avoid pruning spring flowering shrubs until after flowering. Buds are already formed and if pruned early, you will not have the bloom this spring. Late summer flowering shrubs should be pruned before new growth commences as the buds are formed on the current season's growth.

Robert Dingwall
Chief Horticulturist

Near Extinct Plant in Climatron

Lebronnecia, one of the Garden's many botanic rarities, is now well established in the Climatron, having already attained a height of some 15 inches. Seeds of the near-extinct *Lebronnecia* were first brought to the Garden in 1974 from Tahiti. Here, they were easily germinated although on many occasions showed signs of mortality.

The plant was discovered some 45 years ago by an amateur naturalist named Le Bronnec on the rocky shore of Iva-Iva, one of the Marquesas Islands in the South Pacific Ocean. Ten years ago, the site was revisited and alarmingly, only one fragile tree plus some seedlings remained. In an effort to save the species, seeds were transported to Tahiti where, with care, they yielded a single tree which bore fruit.



LEBRONNECIA is now well established in the Northern section of the Climatron.

Scientists first assumed *Lebronnecia* to be a member of the Malvaceae family which includes cotton, okra, and hibiscus. Le Bronnec, himself, had called the plant by its native name meaning "white hibiscus." However, closer examination showed the plant to be unlike any other known malvaceous plant. Its leaves resemble those of some widespread mallow trees found on tropical seacoasts while its anthers have more pollen sacs than most members of the Malvaceae, which may mean that this plant is one of the ancient ancestors from which modern cotton, hollyhock and other malvaceous plants arose.

The two American botanists who first described the plant, named it after its discoverer, Le Bronnec. Although considerable effort has gone into describing the plant's salient features, there is much more work to be done before the history and relationships of this rarity are understood. Because *Lebronnecia* is nearing extinction on the remote island where it occurs, the possibility of seeing and studying the living material in St. Louis is of considerable interest to the scientific community. Its showy, inch-long, whitish flowers should also be a welcome attraction in the Climatron for years to come.

William G. D'Arcy
Research Botanist

Garden's Chief Horticulturist Accepts Interior Landscape Award

Robert J. Dingwall, Chief Horticulturist, recently received an honorable mention award from the Men's Garden Clubs of America in their Annual Beautification Contest, for the Missouri Botanical Garden's interior planting of the Equitable Building in St. Louis.

Entries to the Clubs' Interior Landscaping category were judged by a national panel composed of landscape architects, architects, and interior designers. The Garden's project, which Mr. Dingwall directed, was entered into competition by the Webster Groves Men's Garden Club.

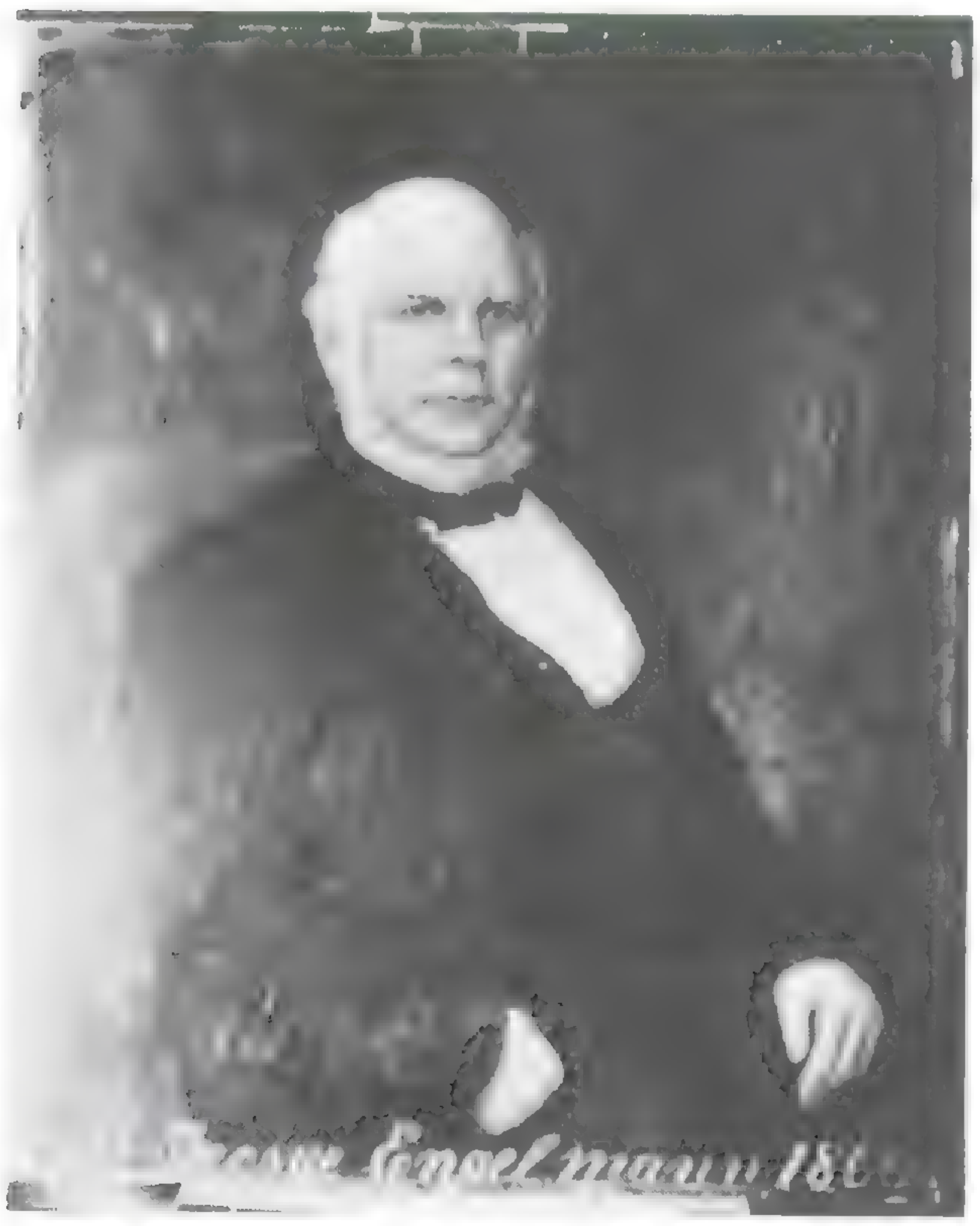
Mr. Dingwall has been a member of the Garden's staff since 1969. He writes the "Gardening in St. Louis" section of the *Bulletin,* a column for the *St. Louis Globe Democrat,* and frequently interprets the Garden's horticultural services on metropolitan area radio and television stations.

Mr. Dingwall has been a consultant to workshops at the Garden and other national botanical institutions, and he teaches courses here and at Washington University. He has authored booklets on pesticides and articles on various horticultural subjects in national publications.

Art Restoration at the Garden: An Ongoing Commitment

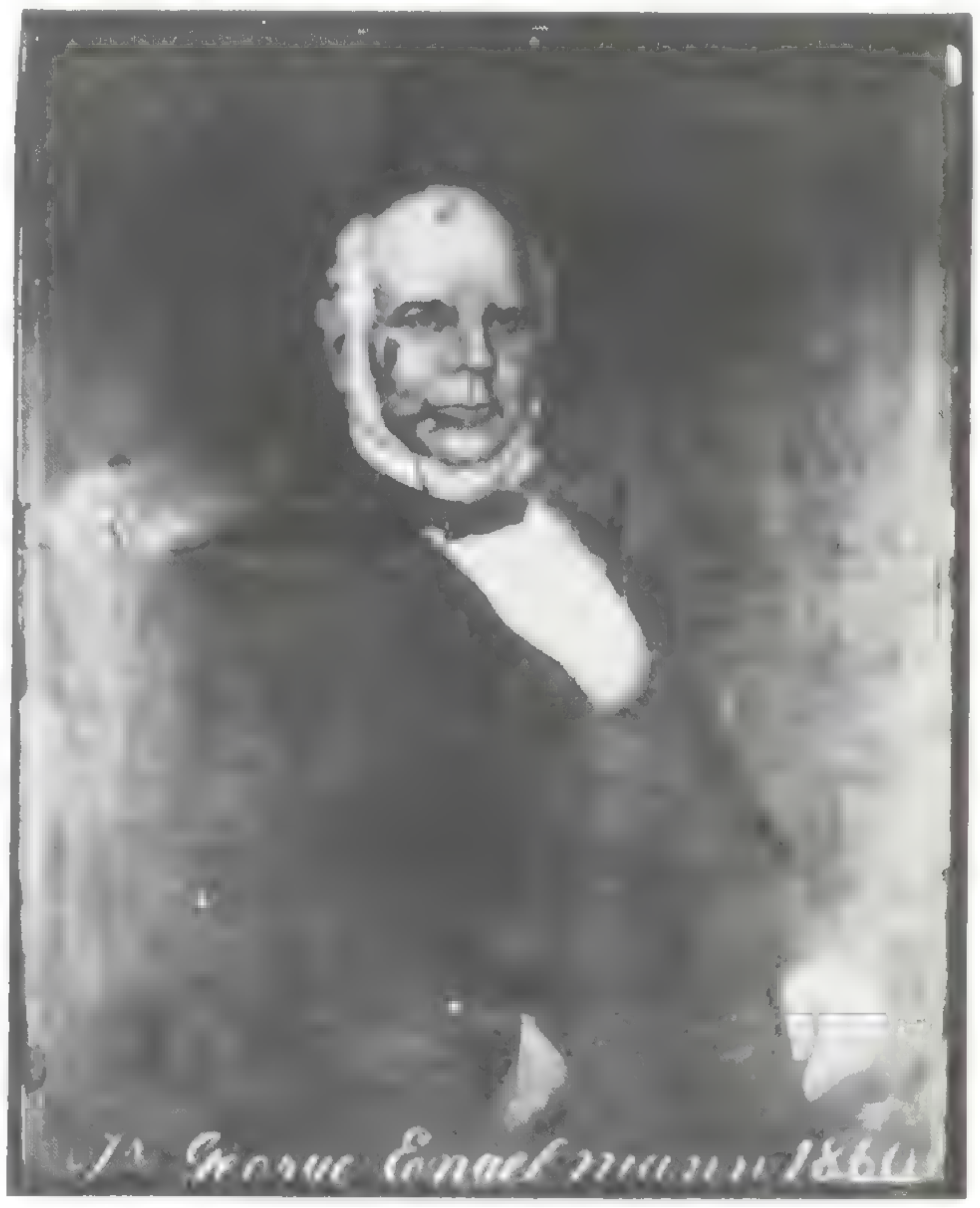
Visitors to the Lehmann Building may have noticed that the portrait of Dr. George Engelmann, Henry Shaw's scientific advisor, is missing. Until recently, the portrait had been on display near the Director's Office. This painting is the first of several in the Garden's possession to be cleaned and restored by the firm of Kennedy and Stow as part of the Garden's continued commitment to the preservation of the countless important materials in its collections.

Extreme care must be taken during the entire process of art conservation. Frequently several months of intensive effort are required before a painting is suitably restored. A later issue of the *Bulletin* will show the final results of the work presently in progress on the Engelmann portrait. Anyone wishing to donate toward this vital project is invited to contact either the Director, Dr. Peter H. Raven, or Head Librarian, James R. Reed. Contributions to this project are tax deductible. Following is a photographic essay of this important work.



The portrait is an oil painting on canvas, glued to a piece of cardboard with a high acid content. This photograph, taken under raking light, reveals cracks in the paint layer caused by improper adhesion of the canvas to the cardboard backing, and by a century of fluctuating temperature and humidity levels.

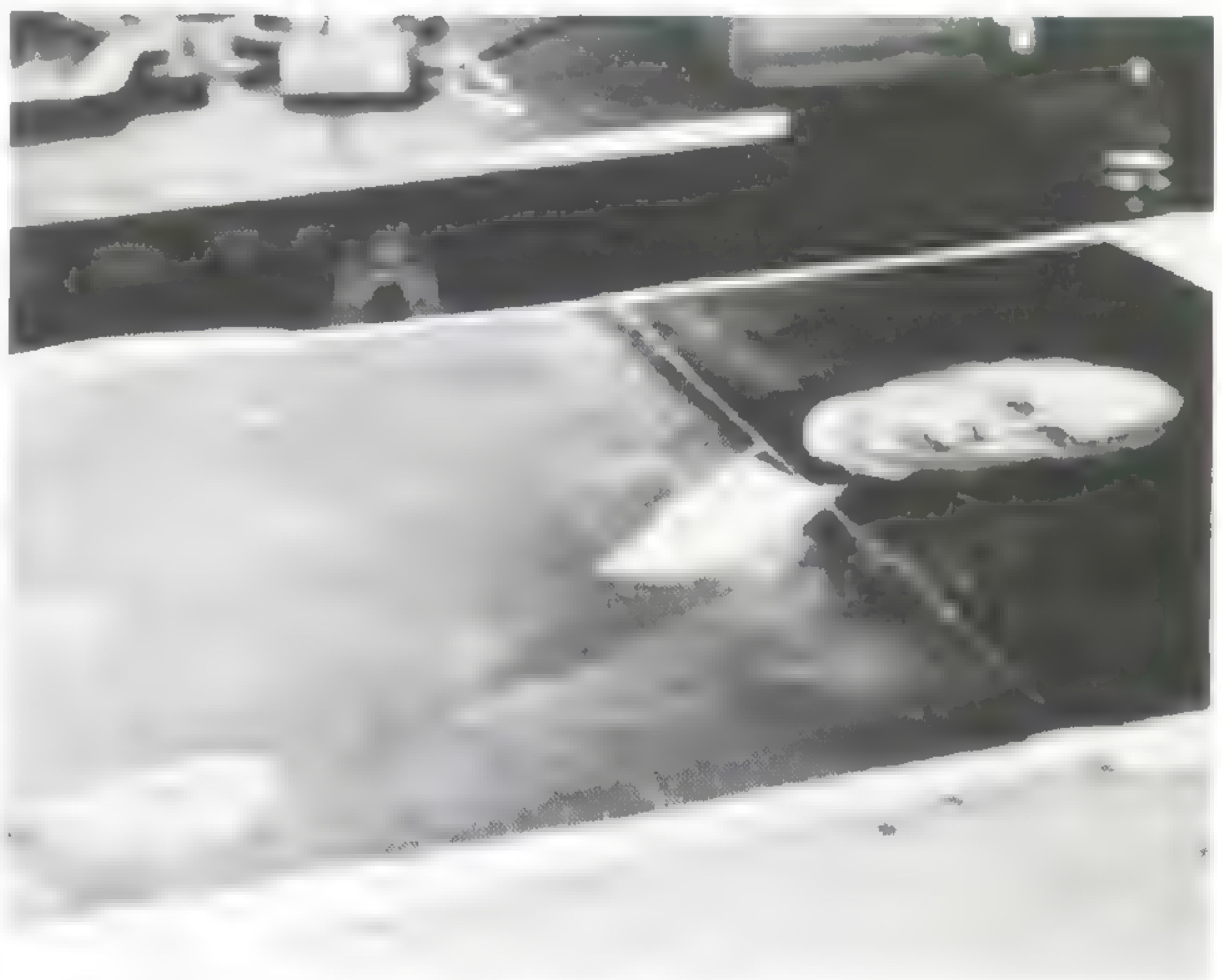
After visual examination of the painting, Ellen Kennedy tests the paint and varnish layers with solvents to determine the best method of cleaning.



Under ultraviolet light, the area which has been cleaned appears as an L-shape in upper left hand corner of the portrait. The dark blemishes on the face of the painting and elsewhere are indications of previous repair.

In order to protect the painted surface while removing the cardboard backing, Cynthia Stow prepares Japanese tissue which will be adhered to the face of the painting.

The Japanese tissue is applied to the face of the painting.



The lower two-thirds of the painting has now been protected by a layer of Japanese tissue. Once this layer is complete, the picture will be ready to be turned over so that the cardboard backing can be removed.

Gardening advice and answers are given by the experts. From left, front row is: Cliff Rhodes, Peter Wilder, Silas Dietz, Charlie Walter, Ed Gildehaus, and John Brown. Second row, from left is: Dan O'Gorman, J. C. Horner, Paul Kohl, Son Fesler, and Fred Galen. Members of the Horticultural Answering Service not pictured include: Herbert Mussler, Payson Derby, Oliver Wagner, and Eugene Kessler.

EXPANDED HORTICULTURAL ANSWERING SERVICE

Volunteer work for the Garden is an extremely diverse and entertaining activity. A good example of such volunteer activity is the Horticultural Answering Service which provides horticultural information to thousands of callers each month.

Obviously, such a job requires experienced gardeners, well versed in horticultural matters, who enjoy sharing their knowledge with others. The job is currently being done by a dedicated group of six men. Paul Kohl, a long time horticulturist on the Garden staff, heads the group and is assisted by volunteers Fred Galen, Son Fesler, Cliff Rhodes, J. C. Horner, and Dan O'Gorman.

With the increased interest in gardening and plant culture, the Garden has found it necessary to increase the number of volunteers available to answer questions. During the past three months, ten men attended weekly training sessions. These were organized by John Brown, who is both a volunteer and staff member. Through his apt guidance, these men are now well prepared and eagerly awaiting calls.

The Horticultural Answering Service is at the heart of the Garden's basic aim: to spread greater knowledge and interest in growing things throughout our area.

Carol Taxman
Chairman of Volunteers

Member of
The Arts and Education
Fund of Greater St. Louis

TWO ART EXHIBITS IN LEHMANN BUILDING

An exhibit of drawings and paintings of the plants and scenes at the Missouri Botanical Garden is on display in the John S. Lehmann Building lobby through March 12. The exhibit consists of works by students enrolled in the Honors Arts Program of St. Louis Public School District.

An exhibit of wildflower photographs by Warren Lammert will be on display in the Lehmann Building lobby, from March 22 to April 16. Mr. Lammert has had previous exhibits in the St. Louis area and a selection of his photographs comprise a part of the Garden's permanent art collection. Display hours for both exhibits are 9 a.m. to 5 p.m., Monday through Friday.

Garden Briefs

A Spring Herb Sale will be held during the last week of April in the Garden's Plant Shop. Growing and potted herb plants, suitable for outdoor herb gardens as well as many culinary uses, will be available for purchase during the sale. Further details will appear in the April *Bulletin*.

The first of four 1976 Members events scheduled at the Arboretum will be a preview of the new Wilderness Wagon tour and walks in the Pinetum area with John Elsley, Curator of Hardy Plants, on Saturday, April 10. The Pinetum, a collection of conifers from around the world, is landscaped much as an English Garden and is expected to be in full daffodil bloom.

Robert Dingwall will moderate a KSD radio program on the Missouri Botanical Garden and gardening in St. Louis. The program, titled "Exploring St. Louis", will be aired at 10:02 p.m., the first Sunday of each month.

The St. Louis Herb Society has reissued its popular cookbook which is a compilation of over 300 favorite recipes of Herb Society members. Priced at $4, the cookbook is now on sale at the Garden Gate Shop.

A companion publication, entitled "Lore and Legend of Great Culinary Herbs and Spices," is also available at the Garden Gate Shop and is priced at $1.50. Profits from the sale of both books directly benefit the Garden.

On his first visit to the Missouri Botanical Garden, Dr. Jacob Galil, Director of the Botanical Garden at the University of Tel Aviv, planted a young henna tree, native to Israel, in the Mediterranean House. The ceremony, symbolic of cooperation between the two botanical centers, occurred one year after Dr. Raven had planted a small pine in the Tel Aviv Garden.

The Board of Trustees: 86 Years of Continuing Service

When Henry Shaw's will was probated in 1889, the first order of business specified in it was the establishment of a governing body to oversee and continue Shaw's efforts to create an outstanding botanical garden. Since that time, the Garden's Board of Trustees has conscientiously followed the dictates of Mr. Shaw's will, and has devoted countless years of effort to the maintenance and improvement of the Garden in all its aspects. It is because of the dedication of the Trustees to the specifications of Shaw's will that the Garden has been able to develop such outstanding features as the Climatron, the John S. Lehmann Building, the Arboretum and Nature Reserve at Gray Summit, and the new Japanese Garden. The consistent high quality of the Garden's indoor and outdoor plant displays, scientific research programs, and diverse educational activities can be attributed in large measure to the tireless dedication of the Board of Trustees.

Over the years, the names on the list of Board members read as a roster of some of the most generous benefactors of the Garden — John S. Lehmann, whose name is memorialized both in the new rose garden and in the herbarium, library and education building; A. Wessel Shapleigh, whose family has donated the memorial fountain at the northeast end of the South Rose Garden. Dr. George J. Engelmann, whose father served as Henry Shaw's scientific advisor; and countless others.

Nor would any discussion of the Board of Trustees be complete without mentioning the role of the various Presidents of the St. Louis School Board, the Chancellors of Washington University, the Mayors of the City of St. Louis, the Presidents of the Academy of Science of St. Louis, and the Bishops of the Episcopal Diocese of Missouri, all of whom serve, as specified in Henry Shaw's will, as *ex-officio* members of the Board.

It is with a profound sense of gratitude that we take this opportunity to salute the dedicated individuals who have served, and are now serving in the role of policy-makers and overseers of one of the nation's great scientific institutions.

MISSOURI BOTANICAL GARDEN
Board of Trustees
Elected Members

Baer, Howard F.	1960-
Barksdale, Clarence C.	1964-
Bascom, Joseph H.	1971-
Blumeyer, Arthur A.	1928-30
*Branch, Joseph W.	1889-1903
Breck, Daniel	1927-1932
Carter, L. Ray	1928-1952
Catlin, Daniel K.	1926-1964
*Collier, M. Dwight	1889
*Cunningham, A.D.	1889-1917
Davis, Samuel C.	1920-1940
Davis, Samuel C.	1960-
Drake, George S.	1890-1895
Eliot, Edward C.	1903-1928
Engelmann, Dr. George J.	1889-1895
Faust, Leicester Busch	1954-1973 Honorary, 1973-
French, Dudley	1937-1960
Glaessner, Oscar E.	1926
Goodson, Richard A.	1965-1971
Hefferman, George F.	1932-1934
Hermann, Robert R.	1966-
Hitchcock, George C.	1903-1947
*Hitchcock, Henry	1889-1902
Hitchcock, Henry	1947-1974 Honorary, 1974-
Holland, Leonard J.	1965-1971
*Johnson, Dr. John B.	1889-1903
*Kaime, David F.	1889-1910
*Lackland, Rufus, J.	1889-1909
Lehmann, John S.	1941-1965 Honorary, 1965-1967
Lockwood, Richard J.	1941-1959
*Madill, Judge George A.	1889-1901
Maffitt, P. Chouteau	1914-1919
Maffitt, Thomas S.	1922-1940
Mallinckrodt, Edward	1915-1928
Matthews, Leonard	1895-1923
Meyer, A.C.F.	1924-1928
Miller, Charles F.	1889-1891
Moore, George T.	1929-1954
Morey, Richard	1925-1927
Norvell, Saunders	1910-1915
Orthwein, William R.	1975-
Otto, Robert W.	1958-1963
Perkins, Albert T.	1926-36
Pettus, Eugene	1932-1957
*Pettus, William H.H.	1889-1922
Pflager, Henry B.	1955-1967
Primm, A. Timon III	1964-
Roe, Charles A.	1918-1925
Scanlan, Philip C.	1911-1931
Schlafly, Daniel L.	1972-
Shapleigh, A. Wessel	1936-1957
Shapleigh, Warren McKinney	1958-
Shepley, John F.	1901-1929
Shoenberg, Sydney M., Jr.	1972-
Smith, Dr. David S.H.	1902-1925
Smith, Robert Brookings	1952-1963
Smith, Tom K., Jr.	1963-64, 1967-
Switzer, R. W.	1917-1918
*Treat, Judge Lammel	1889-1890
Ulrici, Gerald	1935
Wagner, Stephen M.	1926-1927
Whitaker, Edwards	1902-1926
Whitehead, C. Powell	1965-1975 Advisory, 1975-
Wuertenbaecher, Harry E., Jr.	1963-
*Yeatman, James E.	1889-1901
Zeibig, Fred G.	1928-1936

*Members of original Board of Trustees, 1889

MISSOURI BOTANICAL GARDEN
Board of Trustees
List of Presidents

Lackland, Rufus J.	1889-1909
Kaime, David F.	1910
Whitaker, Edwards	1910-1926
Eliot, Edward C.	1926-1928
Hitchcock, George C.	1928-1947
Lockwood, Richard J.	1947-1953
Lehmann, John S.	1953-1958
Smith, Robert Brookings	1958-1962
Hitchcock, Henry	1962-1967
Wuertenbaecher, Harry E., Jr.	1967-1970
Whitehead, C. Powell	1970-73
Bascom, Joseph H.	1973-1975
Smith, Tom K., Jr.	1975-

Heritage and History

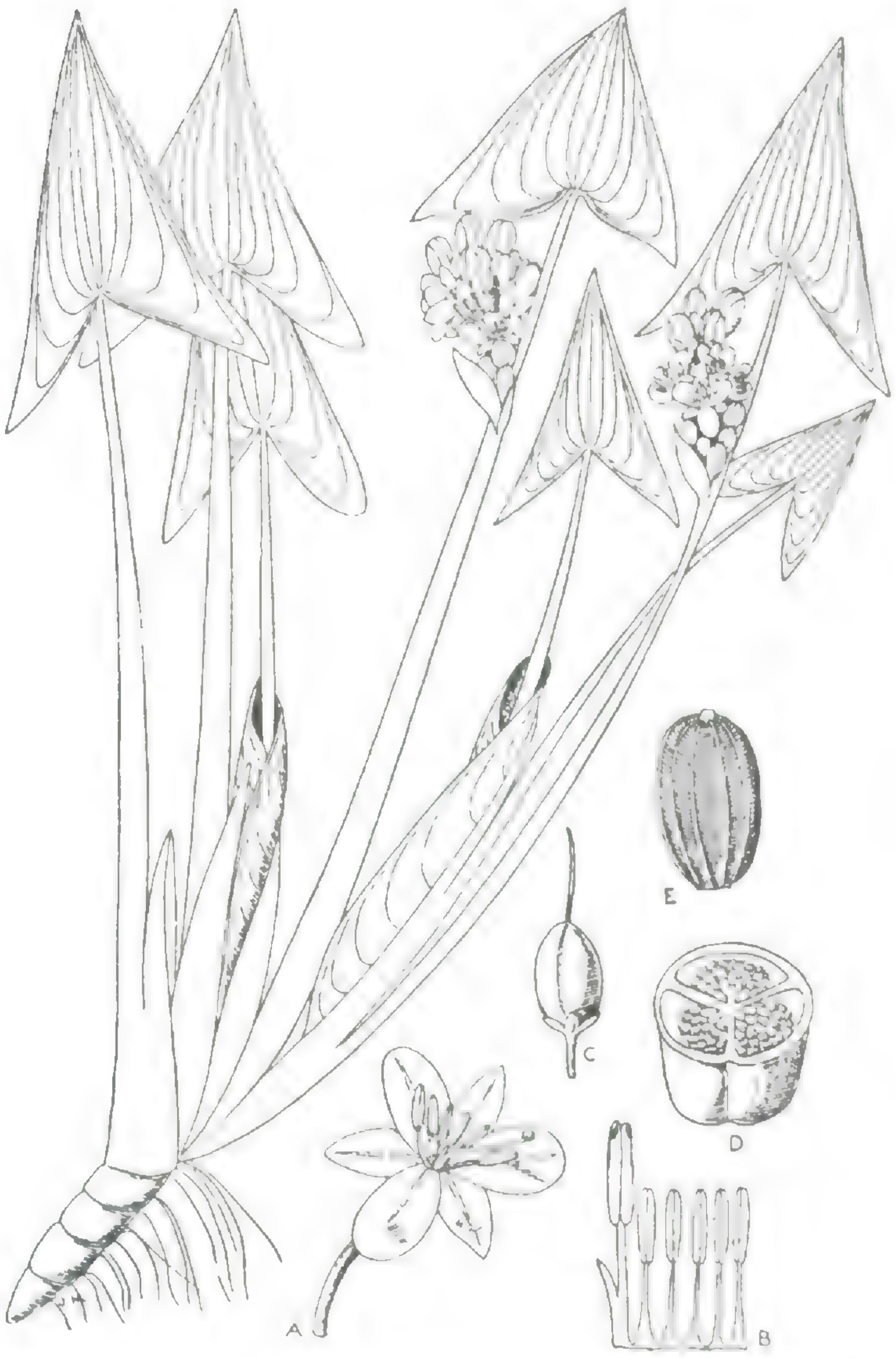
First Botanical Garden Was Established in Padua, Italy

On May 29, 1545, the first botanical garden in Europe was established in Padua, Italy by an act of the Venetian Senate. It was part of the University of Padua. It was a garden for scientific study of plants built in a world when man knows he "is the measure of all things" and was most active during an age when the world was becoming much larger through exploration. It was here that the potatoes found on the slopes of the Andes were first cultivated on European soil.

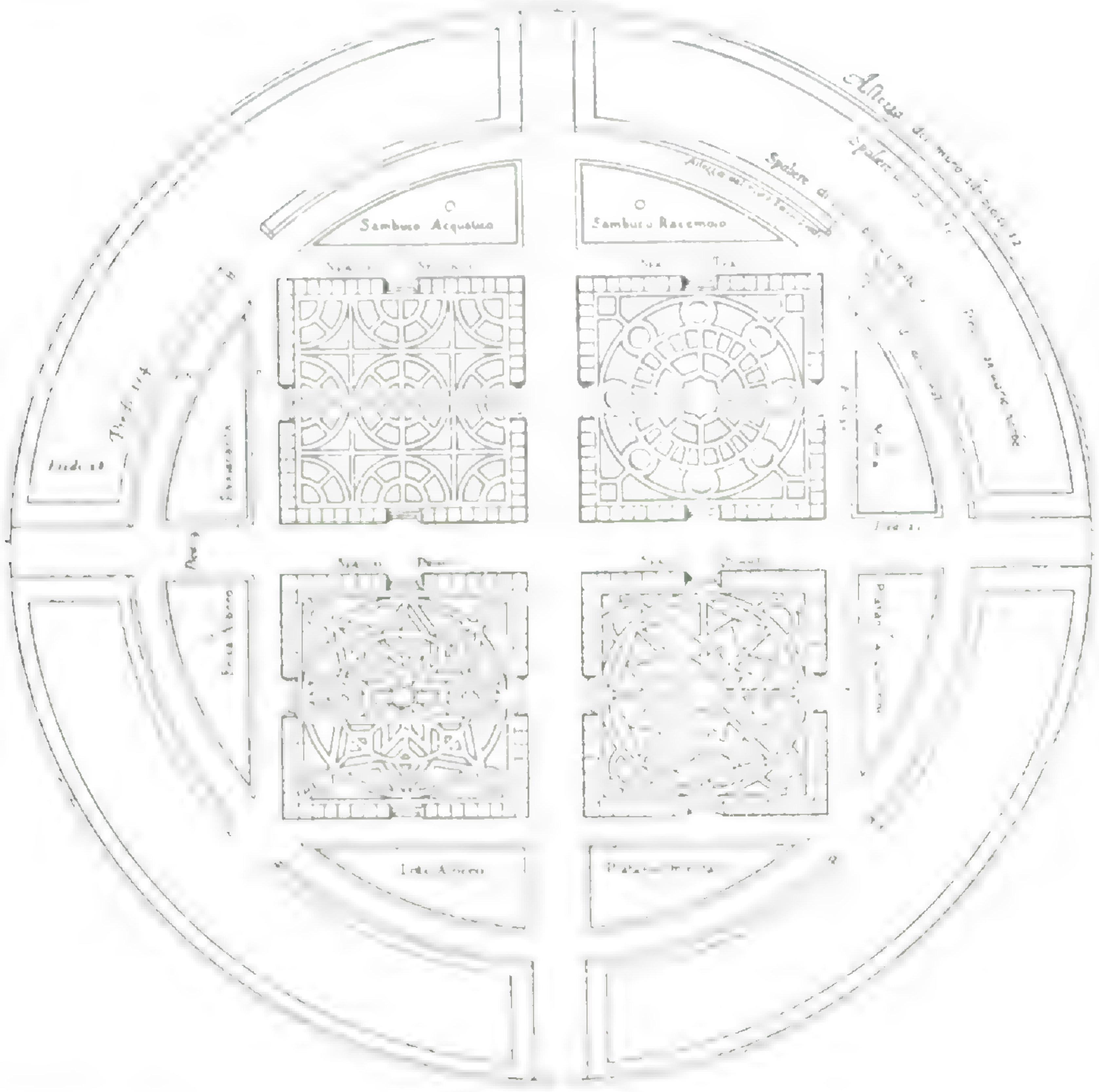
The garden plan, a perfect circle 84 meters in diameter, further divided by formal rectangles, reflected the 16th Century mind and its concept of the universe. The world was uniform and symmetrical, unified platonically. As it was designed, the garden was an ideal world.

Its first political patron was the Venetian senator, patrician Donicle Barbbaro who was himself a botanist of some note. The architect Giovanni Moroni da Bergamo's plan was executed by Senator Barbbaro and University of Padua botany professor, Pietro di Noale. The first Praefectus or Director, Luigi Squalerno, was followed by a long line of distinguished botanist directors. In the drawing, right, is shown *Pontederia* or pickerel weed, which was named after G. Pontederi, a Director who lived 1688-1757. The genus and the family, Pontederaceae, bear his name. The family includes 6 genera and 20 species. *Eichornia*, or water hyacinth, is another familiar genus in the family, and may be seen in the Climatron, together with the pickerel weed. The lovely old garden in Padua is still a pleasure to visit.

Tamra Engelhorn Raven



Pontederia or Pickerel Weed. Named in memory of a Padua Garden Director who lived in the 18th century.



Plan of the 16th century Padua Garden.

!! LAST CALL!!

A WEEK IN FABULOUS

MONTE CARLO

DEPARTURE: MARCH 28

RETURN: APRIL 5

$499 PER PERSON

CONTACT MEMBERSHIP
OFFICE 772-7600

National Science Foundation Grant To Support 'Floristic Survey of Amazonian Peru'

The National Science Foundation has announced an award of $18,332 for initial support of a study, "Floristic Survey of Amazonian Peru," to be conducted jointly by the Missouri Botanical Garden and Field Museum of Natural History in Chicago. Dr. Alwyn H. Gentry, Assistant Curator of the Garden's herbarium, is principal investigator of this project to which an additional $114,600 has been commited for increased study during the next two years. Amazonian Peru, roughly the size of Texas, is a very rich lowland tropical area. It is poorly known botanically and the main objective of the new project is to collect and identify plant specimens and catalog the species of this region, important segments of which are being rapidly destroyed. A second goal of the project is completion of the *Flora of Peru*.

Field headquarters for the research operations will be at Iquitos, Peru, where a permanent laboratory facility has been set up. A full time resident collector and botanists from Missouri Botanical Garden, Field Museum and other collaborating institutions will work out from this center, mostly by boat, to explore all of Amazonian Peru. It is anticipated that this project will develop into a major long-term focus for the Garden's tropical research.

Dr. Alwyn Gentry collecting plants in Amazonia, Peru.

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In Honor of Recovery of Mrs. David Baron
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In Honor of Recovery of Mrs. Jean Charak
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In Honor of Mr. and Mrs. Joseph Corn Anniversary
Mr./Mrs. Meyer Levy

In Honor of Recovery of Dr. I. J. Flance
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In Honor of Elsie Glik Birthday
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In Honor of Mrs. Carl Lyss
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In Honor of Mr. and Mrs. Steve Rosenbloom Marriage
The Jules Berg Family

In Memory of Ms. Charlotte Brandt's Mother
Margie Berg

In Memory of Mr. Harold P. Davison
The Rose Society of Greater St. Louis

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MISSOURI BOTANICAL GARDEN BULLETIN
2345 Tower Grove Avenue
Saint Louis, Missouri 63110

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Missouri Botanical Garden Bulletin

English Woodland Garden Scheduled for May 4 Dedication

On Tuesday, May 4, the English Woodland Garden, the second of three Bicentennial projects at the Missouri Botanical Garden, will be formally dedicated by Professor John Heslop-Harrison, Director of the Royal Botanic Gardens, Kew, England. The dedication fittingly coincides with the anniversary of Henry Shaw's arrival in St. Louis on May 4, 1819.

The new two-acre garden, located east of the Japanese Garden, has been designed by John Elsley, Curator of Hardy Plants. Elsley, a native of Essex, England, joined the Garden's staff in 1973. Numerous volunteers and staff members of the Horticulture Department have been working with him to ready the Woodland Garden for its dedication.

To explain the underlying principles associated with this style of gardening, detail the basic steps taken in the establishment of the Woodland Garden; and describe the plant material utilized, Mr. Elsley has written two articles for *Bulletin* readers. The first follows. The second will be published in the May *Bulletin*.

The past thirty years have seen a great expansion of the "woodland" style of gardening in Britain. Within such gardens, be they large or small, the horticulturist usually aims to cultivate as varied a range of plant material as possible often in simulated conditions which resemble closely those experienced in nature by a given plant species. The plants included in woodland gardens are often representative of native floras from many parts of the globe, a woodland garden thus providing an ideal setting for the display of many treasures accumulated by the ardent plantsman, a creature often possessed with a strong collective instinct!

Seasonal Displays

In many instances a woodland garden will exhibit a dominance of certain plant groups which result in spectacular displays at given seasons: Rhododendrons and azaleas are frequent "dominants." The Missouri Botanical Garden woodland area will incorporate azaleas and dogwoods in this feature role, both of which should annually provide a display highlight in early May.

Professor John Heslop-Harrison, Director of the Royal Botanic Gardens, Kew, England.

(Photo Courtesy of Hunt Institute for Botanical Documentation.)

Woodland gardens are usually designed within existing wooded locations, our own garden being situated in the wooded area of 1½ acres immediately west of the Lehmann Building (from the windows of which one can obtain an excellent panoramic view of the garden) and extending to the eastern edge of the Japanese Garden. The layout and new plantings of the Woodland Garden are such that the whole area will harmonize with the adjacent Japanese area and

Continued on next page

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April 1976

provide an interesting and attractive approach to the oriental landscape.

In Britain, the location selected for a woodland garden usually consists of an area supporting a population of good quality native trees, the oaks being especially favored. The woodland is also usually predominately deciduous, and naturally in such instances the major growth and flowering periods of associated species is during the spring prior to the tree foliage greatly reducing the light intensity reaching the lower shrub and herbaceous layers. This factor is well illustrated in the native Missouri woodlands and can seasonally be observed in spectacular fashion at the Garden's Gray Summit Arboretum.

Summer Sun Intensity

Intensity of summer sunshine in St. Louis is an adverse factor in the successful cultivation of many introduced plant species, so a habitat which provides natural summer shade combined with a degree of protection against cold winter winds greatly enhances the prospects of increasing the range of cultivated hardy plants — an important goal for the Missouri Botanical Garden as one of the country's leading botanical and horticultural institutions. Our existing woodland location supported few trees which could be considered "specimen" in description so that during the initial construction stages most specimens with shade providing potential were retained although many of these will be removed in a few years once the wide range of newly planted trees and shrubs make demands for more headroom.

Decidious woodland soils normally exhibit excellent chemical and physical properties being annually enriched by leaf fall, although on a garden scale any soil deficiency can normally be rectified. Different sections of a woodland garden can be devoted to plants requiring more specific growing conditions, areas where, for example, plants needing greater amounts of shade, moisture and acidity levels (e.g., Primulas) can be successfully cultivated. The early installation of an irrigation system throughout our Woodland Garden will considerably reduce yet another important limiting factor of plant growth in the St. Louis area.

Soil Preparation

The early formative stage following the removal of a roadway, culminated in the removal of unwanted trees and shrubs, (including roots) and was succeeded by the most important operation in the construction of *any* garden — namely, soil preparation. After deep cultivations, organic matter in the form of leaf mold was incorporated, peat moss would have been an excellent but more expensive alternative. Top soil was then spread over the surface in order to obtain a uniform grade over the entire area and again this was rotovated into the existing soil. It was especially important to add sufficient soil to the section of the garden where smaller beds were constructed in order to allow for natural soil stabilization. Planting then followed and individual subjects and the smaller beds were mulched heavily, an operation which has the important dual effect of moisture conservation and weed control throughout the growing season and during the winter months helps to prevent low temperature damage to more tender subjects. The outline of the major beds and paths was established by horizontally laid tree branches, which, in combination with the pathways constructed of wood chips provide the garden visitor with an aesthetic feeling of a woodland trail. In Britain such pathways are normally grassed.

Informal Layout

Initially, our Woodland Garden consists of two sections, both highly informal in their overall layout, one section consisting of a series of beds intersected by a network of pathways and an even more informal section with less paths and no distinct beds. Throughout the entire garden many new trees, shrubs and herbaceous plants have already been incorporated, inaddition to approximately 750 azaleas concentrated in the series of informal beds and extensive plantings of dogwoods which will eventually dominate the adjoining section. One of the major trends related to plant materials incorporated into the woodland Garden will be in the direction of North American native subjects, a group of plants that has and continually is playing an important role in providing the raw materials for garden enrighment throughout the world.

John E. Elsley
Curator of Hardy Plants

Annual Flower Sunday on April 25

Flower Sunday, to be held April 25 at Christ Church Cathedral, will feature an elaborate altar display of flowers from the Missouri Botanical Garden. Flower Sunday is a tradition established through Henry Shaw's will and an annual event since 1890. The Flower Sunday service will begin at 11 a.m. A Flower Festival will be held in and around the cathedral area on Saturday, April 24, from noon to 5 p.m.

The MISSOURI BOTANICAL GARDEN BULLETIN is published 11 issues per year monthly except August, by the Missouri Botanical Garden, 2345 Tower Grove Avenue, St. Louis, Mo. 63110. Second class postage paid at St. Louis, Mo.

M. P. CRONIN, Editor

SUBSCRIPTION RATES:
$5.00 per year. $6.00 foreign.

Japanese Festival Day, May 9, To Highlight Japan's Culture

A Japanese Festival Day, to be held May 9 on the Garden's grounds, will highlight many of the diverse and subtle expressions of Japan's culture. Ranging from *origami*, the art of Japanese paper folding, to *Ikebana*, the stylized art of flower arranging, the displays, exhibits, and films will offer visitors to the Garden a rare opportunity to more fully appreciate and enjoy aspects of the country's culture.

The Festival, sponsored by the Japanese American Citizens League in cooperation with the St. Louis — Suwa Sister City Committee, promises to create a greater awareness of Japanese and Japanese-American cultural heritages. To date, the program includes many varied demonstrations and forms of entertainment new to this area.

Antique samurai swords from the Meiji period to the pre-World War II period will be exhibited for the first time in St. Louis. The $200,000 private collection will be on view courtesy of Japan Air Lines.

Suwa Tree

Art work and photographs by the schoolchildren and residents of Suwa, Japan, the sister city of St. Louis, will also be featured during the Festival. A thousand *origami* paper cranes will be sent from Suwa to decorate a "Suwa Tree" near the Japanese Garden, located in the Garden's southwest corner.

The $700,000 Japanese Garden, a project which first originated with the Japanese American Citizens League, will be dedicated next Fall as a Bicentennial event. Although construction at the site is not yet complete, many features and plants are in place, making a walk through the area enjoyable and rewarding.

Dr. Peter H. Raven, Garden Director, and some of the Japanese Festival participants.

(Photos courtesy of Mac Mizuki)

Ed Tsugita, President of the Japanese American Citizens League, and Dr. Raven at the Suwa Lantern in the Japanese Garden.

During the Festival, Japanese kimonos will be modeled by the Harusame Club in a program beginning with children's apparel and encompassing the types of kimonos worn at each period in a Japanese woman's life. A beautiful wedding kimono has been lent for use by Mrs. Eugene Schwarz.

Aikido Demonstration

Japanese children's dances, folk dances, and demonstrations of *Aikido*, a form of Japanese movement will also be staged during the Festival. Throughout the day, cultural films on the Gardens of Japan will be shown in the John S. Lehmann Building Auditorium.

Delicacies such as chicken teriaki, makisushi and tamagomaki will be sold during the afternoon. A tea ceremony and demonstration will be conducted by Mrs. Kikue Atkins. In addition, there will be exhibits of Japanese dolls, and display tables featuring the art of calligraphy and Japanese pottery techniques. The activities, demonstrations and displays will be presented on the Garden's grounds and in the Lehmann Auditorium throughout the day. The Festival hours will be from 10 a.m. to 6 p.m.

SPRING LECTURE SCHEDULE CHANGES

The schedule of the Spring Lecture Series for Members was revised after the March, 1976 *Bulletin* had gone to press. Dr. William D'Arcy's lecture, entitled "The Mountain Gorilla: Nutrition and Habitat," has been rescheduled for Thursday, April 22, at 10:30 a.m. and 8 p.m.

Dr. Peter H. Raven's lecture, "Our Vanishing Flora," will be given on Thursday, April 29, at 10:30 a.m. and 8 p.m.

APRIL GARDENING

With the early spring this year, many shrubs have now completed their flowering season and can be pruned any time this month. In pruning, remove 2 or 3 of the older canes on old shrubs. Cut these out as close to the ground as possible, head back the balance of the growth at irregular intervals so as to keep a natural form. After pruning is completed, the shrub should be lightly dug around and superphosphate should be incorporated or a balanced fertilizer to help invigorate them. Long ends which develop later can be pruned back in early June to Mid-June so as to keep the form. However, avoid heavy pruning this summer because buds will be formed for flowering again next spring.

Azalea Care

Azaleas which showed winter burn or dying back should be cut back to good wood. Do not cultivate around these as the roots are near the surface. It is important to apply an acid type fertilizer around these to stimulate growth — Cottonseed meal is very good. Apply fresh mulch around the plants to conserve moisture and to control weed growth. Other broadleafed evergreens such as hollies and rhododendrons should be fed at this time.

It is important as far as the holly leaf minor is concerned, to start spraying due to the early spring season. I would suggest watching these closely and if small black flies are seen, start to spray immediately. If this is not the case, apply Malathion or Diazinon about the 3rd week of April. Repeat at 12 to 14 day intervals for at least 2 more applications for good control.

Evergreens and other balled and burlaped shrubs can still be planted provided they are heavily mulched and kept watered until the plants are well established. The earlier these go in this month, the better.

Rose Pruning

Pruning of roses should be completed as soon as possible. As the mulch is removed from around the base of the plant, it should be carefully dug into the bed to incorporate more organic material. Follow this with an application of superphosphate of approximately 1 cup per plant for good growth.

Early spraying for control of mildew and black spot is important. Alternate with Benlate and Pheltan for good control. The first spraying should occur as soon as pruned. The next spraying should go on in a week to 10 days to cover the new growth or after any heavy rain.

Potted roses can be set out at any time. Remove the container very carefully, open the base up and plant according to normal procedures. Bulb stocks such as daffodils and tulips, and other flowering bulbs, should have the foliage left intact for at least 3 weeks after flowering before it is removed. At that time, the foliage can be cut back to just above ground level and these will bloom the following year.

If fertilizer has not been added, I would suggest that you come in with a light application of a balanced fertilizer amongst the bulbs and/or superphosphate to help keep the bulbs built up.

Cool Crops

Due to the warm weather earlier, vegetable gardens should now be in active growth. Many of the cool crops should now be reaching their peak of growth and should be ready for harvesting starting shortly.

Towards the later part of the month, warmer crops can be put in. Tomatoes should not be planted until the ground has become good and warm. If the ground is cold and weather is cool they do not make satisfactory growth. It is better to keep them indoors growing actively than putting them out under cool conditions.

Hardy Annuals

Hardy annuals can be set out at any time this month. Soil should be well prepared; add in plenty of organic matter and superphosphate and protect the plants for the first day or two from the hot sun if possible. Annuals, of course, should be hardened off for several days before planting directly in the garden.

Pre-emerge for control of crabgrass should be applied any time after the first week in April. It is important to remember that pre-emerge works for a period of 40 to 50 days, and for good control needs to be applied again in early June as far as crabgrass is concerned. Follow the directions carefully and make sure that there is a uniform cover over the whole area.

Robert Dingwall
Chief Horticulturist

Garden Briefs

Spring's arrival signals a quickening pace of activity throughout the Garden. Volunteers are urgently needed to assist with the preparation and maintenance of the many outdoor areas under cultivation which now include the Japanese Garden and English Woodland Garden. For further information, contact **Carol Taxman, Chairman of Volunteers,** 772-7600, ext. 53, Tuesday and Thursday from 9 a.m. to 1:00 p.m.

A **Bonsai Workshop** will be offered by the Garden's Department of Education May 18, 19, and 20. On each date the workshop will consist of a three-hour work session conducted by John Yoshio Naka, a noted Bonsai master from California who will demonstrate many techniques and styles of this ancient art. Workshop students will be provided with a tree, suitable container, wire and soil. Further details will appear in the May *Bulletin*.

Chrysanthemum Ball, September 10 To Benefit Boxwood Garden

As part of the Garden's salute to the Bicentennial, a Chrysanthemum Ball will be held on Friday, September 10, at 6:30 p.m. on the Garden grounds. Dr. Peter H. Raven, Garden Director, has announced that proceeds from the event will directly benefit the Edgar Anderson Memorial Boxwood Garden.

The Boxwood Garden, occupying over three acres between the Lehmann Rose Garden and Japanese Garden, is now under active construction. It consists of a series of grassy glades lined with varieties of boxwood. The Garden is named in honor of Edgar Anderson, a scientist who was associated with the Garden for many years. He introduced many fine Balkan varieties of boxwood to the United States.

Mrs. Walter G. Stern, chairman of the Chrysanthemum Ball, has announced that major St. Louis corporations will support this Fall benefit as corporate sponsors. They include First National Bank in St. Louis, Monsanto Co., McDonnell-Douglas Corp., Tiffany Industries, Tower Grove Bank, Tobey Fine Papers, and Universal Printing Co.

The Patron Committee invites all Members of the Garden to serve as patrons of the Chrysanthemum Ball. Patron donation is $150 per couple, ($120 tax deductible). Patron participation is limited, so please fill out patron reservation blank promptly. General invitations will be mailed to Members of the Garden this summer.

Committee members are eagerly planning a delightful evening. They anticipate an oversubscribed party and hope you will join them.

The Committee Members are: Mrs. William Andrews, Mrs. J. Arthur Baer, II, Mrs. John Brodhead, Jr., Mrs. Dwight W. Coultas, Mrs. Theodore P. Desloge, Jr., Mrs. Charles W. Freeman, Mrs. Frederick O. Hanser, Mrs. Charles G. Houghton, Jr., Mrs. Watts Humphrey, Jr., Mrs. Henry O. Johnston.

Also, Mrs. Landon Y. Jones, Mrs. Robert McK. Jones, Mrs. Alexander Kerckhoff, Jr., Mrs. Charles F. Knight, Mrs. Robert E. Kresko, Mrs. John D. Lipscomb, Mrs. Willard L. Levy, Mrs. Jules L. Pass, Mrs. Eugene H. Reese, Mrs. William A. Sims, Mrs. George L. Stemmler, Jr., Mrs. Charles B. Thies and Mrs. Don L. Wolfsberger.

Honorary Co-Chairman of the Ball is Mr. C. Powell Whitehead, a past president of the Garden's Board of Trustees and currently a Member of the Trustees' Advisory Board.

Mrs. William A. Sims
Publicity Chairman

Mrs. Walter G. Stern, chairman of The Chrysanthemum Ball.

The Chrysanthemum Ball

FOR THE BENEFIT OF THE BOXWOOD GARDEN

Friday Evening, September 10, 1976, 6:30

Patron: Two tickets $150
($120 is tax deductible)
One ticket $75
($60 is tax deductible)

I wish my name to appear on the invitation as follows:

____

Tables are for ten people. I wish to be seated with the following people:

____

____

Name ____
Address ______________________________________
Phone ________________ Zipcode _______________

Please make check payable to The Chrysanthemum Ball and return with this form to:

Membership Office
Missouri Botanical Garden
2345 Tower Grove Avenue
St. Louis, Missouri 63110

NOTED IKEBANA MASTER TO LECTURE HERE MAY 11

A lecture-demonstration on the art of Japanese Flower Arranging will be presented at the Garden on Tuesday, May 11, by Shuko H. Kobayashi, master teacher of floral art in the Sogetsu School of contemporary Ikebana design.

The program will be given at 1:30 p.m. in the auditorium of the John S. Lehmann Building. Admission is $3.50 per person and, because of limited space, advance reservations are required. Checks payable to the Missouri Botanical Garden should be sent to the Membership Office, Missouri Botanical Garden, 2345 Tower Grove Avenue, St. Louis, Missouri 63110. Tickets will be mailed in advance of the lecture.

Mr. Kobayashi is a well known artist and teacher whose works have been exhibited in one-man and group shows in Japan and throughout California. In Tokyo, in 1955, he received the top award at the All Japan Ikebana Art Competition. He designed a special arrangement for the visit of the Emperor and Empress of Japan to San Francisco in 1975.

In his lecture-demonstration at the Garden, Mr. Kobayashi will create designs utilizing local plant material such as trees, roots, branches, shrubs and flowers. He also works with wood and metal to create sculptural forms which are often incorporated together, in his finished work.

Bicentennial Herb Sale April 28 — May 5

A Bicentennial Herb Sale featuring historic, culinary, medicinal and housekeeping herbs, will be held in the Garden's Floral Display House from Wednesday, April 28, through May 5. The sale, sponsored by the Garden's Plant Shop, is in recognition of the nation's Bicentennial and the historic importance of herbs to our pioneer and colonial forebearers.

The sale includes 100 to 150 herb varieties not only the familiar herbs but also the lesser grown herbs whose historic roles may have vanished but whose garden qualities remain.

The sale will open with a Members Day on Wednesday, April 28th, where the customary Members ten percent discount will be given. The public sale will begin a day later, on Thursday, April 29th, and continue throughout the week.

Plants will be arranged by their common names in alphabetical order. Most will be in three-inch pots and priced at a uniform price per pot. In addition, there will be an information booth at the entrance to the sale area where an alphabetical list of the sale herbs with basic information about each will be available at nominal cost.

Included in the Bicentennial sale are such herbs as: pewterwort (bottlebrush), garderobe (lad's love), burn plant, and Oswego tea, which was popular with the colonists who drank it as a substitute for the Asian teas which they boycotted in protest against the tea tax.

Virtually every culinary herb which grew in George Washington's kitchen garden at Mt. Vernon will be available, including rosemary, French tarragon, marjoram, sage, mint, basil, thyme, and oregano.

The tea herbs of chamomile, lemon balm, lemon grass and calendula (pot marigold) will also be sold, as well as lemon verbena, a native of South America which arrived in North America early in the 18th century and was instantly popular as a refreshing, new herb tea.

An exciting collection of attractive hanging baskets will be on display having been preplanted with such appropriate herbs as Attar of Roses and Peppermint geraniums in single plantings. Other baskets are now being planted by Garden staff members to illustrate the technique of planting several herbs in one container to create a garden in miniature for gardeners who are somewhat short on space for their herb gardens.

All but two herbs mentioned in *A Treatise on Gardening,* written in the early 1700's by John Randolph, are included on the sale list.

To study the herbs of the Bicentennial and to grow them is to gain new appreciation of the useful plants which man has relied upon throughout the ages to provide the necessities and niceties of life.

Randall Anderson
Manager, Horticultural Sales

Spring and Summer Members Events at Arboretum

The Arboretum will offer four special events this Spring and Summer for Garden Members. These activities promise to be enjoyable as well as educational and will bring increased appreciation of nature's beauty. The Members Days are as follows:

April 10 Wilderness Wagon Rides, previewing a newly written script. Landscape Walks, guided by John Elsley, Curator of Hardy Plants.

April 22 Wildflower walks led by members of Webster Groves Nature Study Society including Edgar Denison and Art Christ.

June 6 Parent-Child Day — Planned outdoor activities for the family.

August 21 Float trip on Meramec River through Arboretum, guided by Arboretum Staff.

The first events on April 10, will feature Landscape Walks with John Elsley, Curator of Hardy Plants. Areas of the Pinetum will be covered, with particular attention paid to the principles of English gardening as shown in this unique collection. Walking tours will leave from the Visitors Center at 11:00 a.m., 1:00 and 3:00 p.m. Also featured will be Wilderness Wagon rides through the Arboretum with the recently completed new tape narration. Wagon tours will be available from 10:00 a.m. to 4:00 p.m. Members are advised to bring a sack lunch and spend a day in the country.

The second event, Thursday, April 22, features Wildflower Walks led by Edgar Denison, author of *Missouri Wildflowers,* Art Christ and several other members of the Webster Groves Nature Study Society. It is expected that this date will feature a number of woodland wildflowers in bloom as well as the final blooms of the daffodils and early meadow flowers. Members can ride the Wilderness Wagon or stroll to the Trail House where all tours will start. Two long walks will be given at 10:00 a.m. and 1:00 p.m. It is suggested that a sack lunch be brought for the morning walk. Shorter walks will be given starting hourly from 10:30 a.m. to 1:30 p.m.

Details concerning the last two events will be announced in future bulletins. For more information — call 772-7600 — Station 81.

June Hutson, Chairman
Arboretum Members Events

Visits to Twelve English Gardens Scheduled for Members Tour

Plans for our Bicentennial visit to English Gardens have now been completed and a few vacant places on the tour are still available. Our party will be strengthened by the company of the Garden's Director, Dr. Peter H. Raven, and Mrs. Raven, both of whom are enthusiastic and knowledgeable concerning many aspects related to English gardening.

Between our departure from St. Louis on May 19 and our return on May 30, we shall visit twelve magnificent gardens in addition to spending a day at the Chelsea Flower Show, considered to be the finest event of its kind in the world. The gardens we shall be visiting classically exhibit the numerous styles encompassed by the term "English Gardens." At Stowe and Rousham House, the landscape garden of the 17th and 18th century reaches its zenith, with a style and function in marked contrast to the Oxford Botanic Garden (founded in 1621) and the small but fascinating Chelsea Physic Garden situated on the Thames embankment in Central London.

The historic house at Sezincote in the Gloucestershire Cotswolds provides a focal point for a garden which exhibits areas depicting several different eras of garden design, while at Heaselands and Borde Hill in Sussex are to be seen magnificent collections of rhododendrons and camellias. Sissinghurst Castle and Hidcote Manor, do, in many respected opinions, compete for the title of England's finest garden and in each case the visitor is treated to a huge range of differing plant material utilized to perfection.

Superb examples of recently created and "personal" gardens will be seen at Crittenden House and Kingston House, while the garden of the Royal Horticultural Society at Wisley is a mecca for anyone interested in gardening. A number of the above gardens are not normally open to visitors and at each garden, in addition to our own "resident experts," we shall be privileged to have the services of a person closely connected with the particular garden. An evening of medieval entertainment and dining, near the Tower of London will culminate our visit!

The tour will be centered on London with a two-night stay in Oxford. If you are interested, it is essential that you contact the Membership Office immediately, phone 772-7600.

John E. Elsley
Curator of Hardy Plants

Member of
The Arts and Education
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MISSOURI BOTANICAL GARDEN BULLETIN
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Missouri Botanical Garden Bulletin

A Garden Priority: Easy Access for Handicapped Visitors

> *I have for many years been engaged in laying out and establishing a Botanical garden . . . for the object and with the view of having for the use of the public a Botanical garden easily accessible which should be forever kept up and maintained . . .*
>
> **— Excerpt from the will of Henry Shaw, signed on September 2, 1889**

Throughout the years, the Garden's policy towards handicapped visitors has echoed Henry Shaw's words. The Garden's Board of Trustees has appropriated funds, where necessary, for facilities for the handicapped so that this sector of the general public can enjoy the Garden's many attractions and utilize its facilities.

Visitors confined to wheelchairs can gain access to every section of the Garden's outside grounds via paved paths. The interior points of interest throughout the Garden are all easily accessible with the exception of Tower Grove House which was constructed in 1849 and is preserved as a historical restoration.

High Ratings

A guidebook of St. Louis for the handicapped, published last year by the Easter Seal Society, gives its highest rating ("A") for accessibility to the Garden's Linnaean House, Floral Display House, and Desert and Mediterranean Houses. The Climatron, Restaurant, and Garden Gate Shop also achieved "A" ratings in the majority of categories.

Continued on next page

Bonsai Lecture-Demonstrations, May 18 & 19, by John Yoshio Naka

Two lecture-demonstrations on bonsai, the art of creating a perfectly shaped miniature tree, will be presented at the Garden on May 18 and 19 by noted bonsai master, John Yoshio Naka.

Offered by the Garden's Department of Education, the sessions, each three hours long, will be conducted in the Lehmann Building auditorium at these times:
Section A: Tuesday, May 18, 1:00 p.m. - 4:00 p.m.
Section B: Wednesday, May 19, 9:30 a.m. - 12:30 p.m.

The fee, per session, is $4.00 per enrollee for the public, $3.00 for Garden Members. Advance registration is necessary and should be made through the Education Department, 772-7600.

Mr. Naka, co-founder of the California Bonsai Society, is a purist who creates styles of bonsai in a careful, traditional manner. During the Garden lectures he will demonstrate how to plant and wire a single trunk or tree, how to use proper tools and effect the correct proportions of soil and pot mixtures to the tree. Mr. Naka himself will make a bonsai out of a large specimen at each lecture session.

Bonsai workshops to be conducted by Mr. Naka, as announced in the April *Bulletin*, are filled.

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Ramps at the western entrances of the Mediterranean and Desert Houses were designed by architect Karl Pettit specifically for use by handicapped patrons to the Garden. The main entrance to the administration building, located at the southern end of the Garden, was also renovated recently with the handicapped in mind and now provides for easy entrance via a ramp.

The Lehmann Building is also equipped with ramps for the handicapped at its southern and western entrances which provide complete accessibility to both the Library and Herbarium as well as the main lobby and classrooms.

Kenneth Peck, Chairman of the Education Department, noted that during a recent class attended by elementary school children, one non-ambulatory youngster, although confined to a stretcher, was nevertheless able to participate.

Wheelchair Tour

The Education Department, said Peck, is also formulating a map indicating the routes, entrances, and points of interest which provide for a complete tour of the Garden by handicapped visitors. Eight stops on the tour are listed, including the Scented Herb Garden which is a special garden developed particularly for the enjoyment of blind visitors.

The Scented Garden, designed by Robert Dingwall and constructed in 1972, consists of eight beds, 32" high. Plantings are selected and grouped for their pleasant characteristics to a visitor's senses of taste, smell and touch.

FLORA OF WESTERN COLOMBIA IS SUBJECT OF NATIONAL SCIENCE FOUNDATION GRANT

The National Science Foundation has announced the award of a $19,200 grant to Dr. Alwyn Gentry, Assistant Curator at the Missouri Botanical Garden, to study the flora of the Choco region of Western Colombia. This grant is sponsored by a new division of NSF for Cooperative Science Programs in Latin America. It is the first such award made to the Garden. Under this program a Latin American country and NSF jointly sponsor and fund a scientific investigator from each country in a joint investigation. Dr. Gentry is working in collaboration with Dr. Enrique Forero, head of the Botany section of the Institute for Natural Sciences at the National University of Colombia. The Colombia counterpart of the NSF has awarded a similar grant to Dr. Forero for this project.

Biologically, Colombia is the richest and most diverse country in the world. The Choco area, west of the Andes where Drs. Gentry and Forero will be working, is the wettest place on earth with 10,000 mm. of rain a year in places. This rain forest-covered region is exceedingly rich in animal species, many of which are found nowhere else in the world. The area, however, is unexplored botanically. The Choco region has no roads and has remained relatively isolated. With the adjacent Darien region of Panama it remains the last gap in the Pan-American Highway between North and South America. Increasing population pressure and work on the last section of the Pan-American highway now threaten the still unknown vegetation of the region. This joint project of the Missouri Botanical Garden and the National University of Colombia aims at securing herbarium specimens of the flora of this interesting region and cataloguing its plant species before they are lost forever.

The Missouri School for the Blind, 3815 Magnolia Ave., assisted with the planning and installation of Braille plaques which designate the common and botanic names of each plant, its description and uses.

New Restroom Facilities

New restroom facilities, being planned in connection with the development of the Japanese Garden and English Woodland Garden, will be specially designed with the handicapped in mind. In addition, the Garden is pleased to announce the recent donation of a wheelchair, bringing the total number to two. This equipment is available, on request, at the Garden's main entrance.

The Garden will continue its policy of extending special consideration for the needs of the non-ambulatory and handicapped visitors in order to increase their enjoyment of the Garden's many extraordinary features.

The English Woodland Garden — A Diversity

In the April Bulletin, *John Elsley, Curator of Hardy Plants, explained the basic steps taken in the establishment of The English Woodland Garden at the Missouri Botanical Garden, and the underlying principles associated with this style of gardening. He is seen, at left, in photo above discussing details of the English Woodland Garden with Dr. Peter H. Raven, Director.*

Mr. Elsley's concluding article, which follows, describes some of the plants included in this new garden dedicated this month as a Bicentennial project.

Deciduous woodlands under natural conditions usually consist of three major vegetation levels: an upper tree zone, a middle shrub layer and a lower zone of herbaceous plants. In nature, these zones, or levels, are interdependent on each other for their successful existence; in artificially creating such a woodland feature, which includes plants from many parts of the world, this interdependence of plant species, each of which has basic cultural demands, is of vital importance.

Following the initial clearance of unsuitable trees and shrubs, we were fortunate that remaining were a selection of mature trees that not only provided the important shade factor during the late spring and summer, but at the same time left us with an interesting botanical "superstructure." The majority of these trees are native species from eastern North America including excellent specimens of the Sugar Hackberry (*Celtis laevigata* which is resistant to the Witches Broom disease so prevalent on the common Hackberry), White Elm *(Ulmus americana)*, White Swamp Oak *(Quercus bicolor)*, Sweet Gum *(Nyssa sylvatica)* and Ironwood *(Ostrya virginiana)*, the wood of which is exceptionally hard and 'bleeds' profusely when damaged especially in early spring when the sap flow commences.

This upper layer is further diversified by specimens of the Cherry Birch *(Betula lenta)*, Persimmon *(Diospyros virginiana)* with its rugged tessellated bark, Sassafras *(Sassafras albidum)* and the Carolina Silver Bell or Snowdrop Tree *(Halesia carolina)* with its profusion of white nodding bell shaped flowers in clusters of three to five produced in early April. During the early years of this woodland garden, certain less desirable trees, including Black Locusts *(Robinia pseudoacacia)*, Black Cherry *(Prunus serrotina)* and Cottonwoods *(Populus sp.)* will be retained as they contribute valuable shade; but, as newly planted specimens of more interesting and desirable trees develop, these will be removed.

The newly planted trees are representative of temperate floras throughout the world. American oaks include the Willow Oak *(Quercus phellos)*, Burr Oak *(Q. macrocarpa)* and Chinquapin Oak *(Q. prinoides)*

Continued on next page

Gardening in St. Louis

MAY GARDENING

After the very early Spring we have encountered, garden chores are now at their peak and must be done in order to insure a good season for plant growth.

Spring flowering shrubs that flowered earlier, if they have not been pruned, should be pruned immediately. Remember that next year's buds are produced on the current season's wood. In pruning, not only head the plants back, but in cases where the shrubs have become rather woody, it is important to prune out about one-third of the old canes as close to the ground as possible.

House Plants

House plants can now be moved outdoors after hardening them off. Move them to a protected area for two or three days before planting them in their final position. Plants that are pot-bound should be repotted and then the pots should be plunged up to the rim in a semi-shaded spot where they will receive filtered sun during the morning or afternoon only.

See that plants are kept insect free; that they receive adequate watering during dry spells; and occasional feedings of liquid fertilizer to bring them back into top growth.

The vegetable garden should now be yielding produce from the early planted material. Warm crops should be planted as early as possible. Tomatoes should be set out and mulched for best results later on.

Other plant material in the garden that is already up would benefit by a light mulch. Increase the mulch as the plants get bigger until you have two to three inches of mulch over the garden. This will help to control weeds, keep the soil cool, insure better growth and, during wet weather, allow you to walk in the garden and harvest. However, avoid walking amongst bean plants when they are wet as this can cause rust.

Planting Annuals

Annual beds should now be planted up by first incorporating plenty of organic matter and some extra superphosphate. Do not let these plants sit around or dry out because once the plants are wilted, growth is slowed down through the loss of roots. Buy only fresh, healthy plants from your garden center. The second planting of gladiola bulbs can now go in for later cutting.

Fertilizing the garden may be important depending on the plant growth that you have. If growth appears to be rather light colored or not moving too actively, it may need an additional boost of fertilizer. This often is best done by applying it in liquid form through the watering can. However, follow the directions on the container very carefully. If you are using a balanced powdered fertilizer, it is best to make a small trench two or three inches away from the base of the plants, sprinkle the fertilizer in the trench and then cover over with soil. This way, you prevent water from splashing on the fertilizer or getting on the plants which causes burning.

Roses now need extra strength as, in some cases, buds are already showing or some blooms are now beginning to show color. See that the plants are thoroughly sprayed for insect control and especially for blackspot and mildew. Container grown roses can still be set out; plant these the same way you would any other plants. Loosen the roots around the base so that they can spread out into the new surrounding area. Water them in well. Roses, in general, benefit from a feeding of a liquid fertilizer for an added boost of growth and color prior to their main flush of blooming.

Care of Spring Bulbs

Spring bulbs which flowered earlier, if they have had three to four weeks of good growth since the flower was spaded, can now have the tops removed, cut these back to ground level. Be careful in planting other annuals amongst them that you don't disturb the old bulbs. If you wish to lift the old bulbs, they should be very carefully lifted with foliage attached and healed in at the back of the shrubbery somewhere and the foliage allowed to dry down naturally. Once the bulbs have dried down, they should be dug up and the old foliage and bulb scale should be removed when they are thoroughly dried. Store the bulbs in well ventilated areas away from excess moisture.

Good plants for shaded spots in the garden where you wish a little color are: Caladiums, Impatiens, and Coleus. These all will give very brilliant color provided plenty of organic matter is worked into the soil. Urns in the window boxes should be planted up immediately. See that the soil is high in organic matter. Water plants in with a light feeding of a liquid fertilizer and remember that container grown plants will need more feeding throughout the growing season due to the limited space for root growth.

Robert Dingwall
Chief Horticulturist

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M. P. CRONIN, Editor

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while the Korean Oak *(Q. acutissima)* is an excellent Asiatic member of this genus. Both the American and European Beeches *(Fagus grandifolia* and *F. sylvatica)* will eventually produce impressive specimens and should, like the Chinese Chestnut *(Castanea mollissima)*, Yellow Wood *(Cladrastis lutea)*, Sorrel Tree or Sourwood *(Oxydendrum arboreum)* and various Lindens *(Tilia sp.)* eventually become more widely planted in St. Louis gardens.

Two trees of considerable botanical interest are the Franklinia *(F. alatamaha)*, discovered in Georgia by the great American plant collector John Bartram in 1770, and since 1790 unknown in the wild state; and the Paper Handkerchief or Dove Tree *(Davidia involucrata)*, so called because of the conspicious large white pendulus bracts which surround the flowers.

Several Asiatic magnolia species *(M. dawsoniana, M. cylindrica, M. denudata, M. kobus, M. obovata, M. salicifolia, M. sieboldii, M. sinensis, M. sprengeri, M. Wilsonii)*, in addition to a number of improved named forms of more commonly cutlivated Magnolia species will, in future years, provide valuable information regarding performance in this area of this fascinating group of flowering trees and shrubs.

The diversity value of trees is exemplified by the distinct pendulous habit of Young's Weeping Birch *(Betula pendula 'Youngii')*, the Weeping White Mulberry *(Morus alba 'Pendula')* and striking barks, so valuable for winter effect, are exhibited by the Paper Birch *(Betula papyrifera)*, Acer capillipes and the brilliant coral red coloring of Acer palmatum 'Senkaki'. The flowering and fruiting combination is represented by a range of desirable Crabs *(Malus)*.

Massed plantings of azaleas and dogwoods will annually provide a riot of color during Spring. Approximately 700 azaleas are representative of three dozen of the most suitable varieties for cultivation in this area; the 350 dogwoods demonstrate the diversity of floral variation available to the gardener within this genus. The cultivar (Cloud 9) is a prolific bloomer. 'Cherokee Chief' has deep rose red bracts. 'Rubra' has pink bracts and 'Junior Miss' has a combination of pink and white. Cornus 'Eddie's White Wonder' is a tall growing hybrid between the eastern and western dogwoods *(C. florida x nuttallii)*. The Chinese Dogwood *(Cornus kousa chinensis)* will provide a spectacular floral display in June followed by a vivid bronze crimson fall coloration.

Climbing shrubs are represented by an excellent deep red flowered form of the native Honeysuckle *(Lonicera sempervirens)* and a choice Japanese plant Schizophragma hydrangioides, a climbing Hydrangea now making its way up the large Sycamore which dominates the central portion of the garden. An endangered species from Alabama, Neviusia alabamensis, a member of the rose family, is of considerable botanical interest and exemplifies how a botanical garden functions as a "living museum."

In addition to existing specimens of native Witch Hazels *(Hamamelis vernalis* and *H. virginiana)*, we included several other hybrids and species of this genus, Hamamelis mollis from China and several flower colored hybrids of this species raised in Belgium, which provide a spectacular floral display in winter and early spring.

Many of the herbaceous plantings consist of native American wild flowers, a group of plants of tremendous diversity, many of which are highly prized by gardeners throughout the world. The genus Trillium will be represented by several dozen different species and forms, while such familiar Missouri natives as the Bluebell *(Mertensia virginica)*, Dutchman's Breeches *(Dicentra cucullaria)*, Columbine *(Aquilegia canadensis)*, Bellwort *(Uvularia grandiflora)* and the Celandine Poppy *(Stylophorum diphyllum)* will provide a hint of the natural treasures to be seen in woodlands around St. Louis. Our own Gray Summit Arboretum is, of course, one such excellent location. Several species of terrestrial orchids *(Cypripedium sp.)* have become established and it seems probable that a number of these rather tricky subjects will become permanent residents.

Japan, in addition to providing a vast range of excellent trees and shrubs for cultivation in western gardens, also supports a fascinating herbaceous flora — one, incidentally, that in many ways is still under-exploited. Throughout some of the smaller beds are a collection of Hostas I was able to collect in Japan and these indicate the great potential that this genus offers gardeners. Although attractive in flower, in many cases the variation in leaf form, shape and color makes these members of the lily family indispensable for a range of garden situations. Many members of the Liliaceae are naturally found in woodland habitats; several Lily species (e.g., *Lilium canadensis, L. superbum)* will provide interest well into the summer months. The imposing tall spikes of another Liliaceous plant, Fritillaria imeralis, will appear in April or early May, and although the plant is rather foetid, nevertheless, it is a "must" for such a setting!

Even after a very limited experience, it appears that many of the choice herbaceous plants we have introduced into the woodland garden will survive the testing local climate, if full use is made of mulches which in winter protect the dormant plants from low temperature damage and in summer help to alleviate drought. It appears that the development of a woodland style of gardening will be one important way in which the Missouri Botanical Garden will, in the future, be able to expand and diversify its living collections which will both enrich the aesthetic and scientific value of our institution.

John E. Elsley
Curator of Hardy Plants

C.C. Johnson Spink — A Dedicated Member of the Garden's Board of Trustees

Mr. C. C. Johnson Spink is a current member of the Garden's Board of Trustees whose name was inadvertently omitted from a roster of past and current trustees in the April *Bulletin*.

Mr. Spink, editor and publisher of *The Sporting News*, has contributed his time and expertise as a Board member since his election to the Garden's governing body in 1974. Since January, 1975, he has been chairman of the Arboretum Committee.

In addition to devoting his energies to the Garden, Mr. Spink is a board member on numerous St. Louis area civic organizations, including the St. Louis Symphony and the St. Louis Sports Hall of Fame.

PARENT-CHILD DAY AT ARBORETUM ON SUNDAY, JUNE 6, FOR MEMBERS

The Arboretum will offer a Parent-Child Day on Sunday, June 6, for Garden Members. This special event is for the whole family and promises to be an enjoyable and informative family outing.

Special guest instructors and Arboretum staff members will work with small groups of families at a variety of crafts and activities designed to promote the family's appreciation of the great outdoor world of plants and wildlife.

An activities schedule will be available at the Arboretum's Visitor Center. Families are invited to bring a sack lunch and spend the day. Lemonade will be available.

The Arboretum's 2200 acres of tranquil Ozark landscape provide an ideal setting for this special family event which is being offered again this year in response to the successful 1975 Parent-Child program titled "Sense of Wonder."

June Hutson, Chairman
Arboretum Members Events

Gladys Yates, A Volunteer Who knows Her Business!

Every one of our volunteer workers deserves to be singled out for unselfish devotion to the Garden. One such individual is Gladys Yates, who gives her time to the Garden's business office twice weekly. Gladys's thirty years of experience in accounting and bookkeeping makes her a particularly valuable member of the staff.

Gladys's home is most convenient, situated only a pleasant one block walk from the Garden's front gate. This location is no accident, having been selected to provide a suitable setting for daily constitutionals, taken by Mr. and Mrs. Yates in the park-like atmosphere of the Botanical Garden's grounds.

Even when she is not working at the Garden, Gladys can be seen strolling through the grounds, enjoying the changing face of the Garden, observing the constant progress of the Japanese Garden and the other projects under way; she is excited at the progress being made under current leadership.

Gladys provides us with a good example of one who repays with her own special talents, the gifts bestowed by the Missouri Botanical Garden. It is a pleasure to salute her and all her fellow volunteers.

Carol Taxman
Chairman of Volunteers

Member of
The Arts and Education
Fund of Greater St. Louis

Trying out one of the new strollers are Garden members Mr. and Mrs. Fred L. Schmidt and their daughter, Pamela.

Main Gate To Rent Strollers for Toddlers

Five strollers for toddlers will be available for rental at the Main Gate during May, June, July and August.

Rental charge per stroller is $1.50, seventy-five cents of which will be refunded when the stroller is returned to the Main Gate.

This newest service of the Garden is another of continuing efforts to respond to public need and facilitate visitors' enjoyment of the Garden.

Neighborhood Tour of Historic Homes on May 15 Will Visit Town House and Tower Grove House

Henry Shaw's Town House and Tower Grove House are two of the sites included on the Shaw Neighborhood Improvement Association's annual tour of historic homes on Saturday, May 15, from 10:00 A.M. to 4:00 P.M.

Tickets for the tour, which is open to the public, are available at the Garden Gate Shop and Tower Grove House, at $3.50 each before May 15, and $4.00 on the day of the tour.

Other highlights of the day will be a guided tour of the privately owned former residence of Henry Shaw's sister, located in Shaw Place, and a view of the city from the pinnacle of the historic Reservoir Park Watertower on Grand Avenue which will be opened for the first time in three decades.

Group rates are available on request. Contact John L. Drew III, 772-0040.

School district superintendents of the St. Louis Suburban Area Cooperating School Districts Inc. recently conducted a meeting at the Garden. The organization, which represents 26 member school districts within St. Louis County, directly contributes to many Garden and Arboretum education programs. Pictured, from left, are Dr. Peter H. Raven, Robert Elsea, Executive Director of the Cooperating School Districts, David Goudy and Kenneth Peck.

MARCH TRIBUTES

In Honor of Mr./Mrs. Stanley Gitt's 25th Anniversary
Margery and Malcolm Steiner
In Honor of Mrs. William J. Hedley
Board of Religious Organization
In Memory of Mrs. Eva G. Blayney
Gloria and Ed Hogbin
In Memory of Mrs. Ingram F. Boyd, Sr.
Mrs. Robert E. Meyer
Mrs. Hiram Norcross
Mr. Charles B. Wheeler
In Memory of Mabelle Erickson
Mrs. Katie Kuhn
Harriette Steuber
In Memory of Dr. Spencer Freeman
Mrs. C. Harry Pujol
In Memory of John L. Gillis
Mr./Mrs. Lloyd W. Hager
In Memory of James A. Griffith
Lt. Col. and Mrs. Willis L. Mog
Delphine and Hardin Smith
In Memory of Mr. Wallace C. Gundlach
Elinor and Marilyn Mazzoni
In Memory of George A. Hern
Mr./Mrs. D. R. Niederlander
In Memory of Robert Jeske
Mr./Mrs. G. C. Bradshaw

In Memory of Jason and Sylvia Kawin
Mr./Mrs. Irwin Gittelman
Claire and Dick Marx
Mrs. Robert S. Mendelsohn
In Memory of Carl and Helen Koerner
Mr./Mrs. Paul P. Mueller
In Memory of Lucia Leonard Kust
Mr./Mrs. Edwin S. Baldwin

In Memory of Marjorie Frank Lesser
Colonel and Mrs. R. E. Smyser
In Memory of Mr. Donald Mapes
Louis and Scott Ittner
In Memory of Lucy Mason
St. Louis Herb Society
In Memory of Mr. Walter R. Mayne
Mrs. Jerome F. Kircher
In Memory of Mrs. Emily Menke
Dr./Mrs. Kenneth J. Lissant
In Memory of Dorothy McClaskey
Mr./Mrs. Edw. Heichelbeck
In Memory of Thomas Parry
Colonel and Mrs. R. E. Smyser
In Memory of Mr. Norman E. Schaumburg
Mrs. Theodore C. Eggers
In Memory of Mrs. Frank T. Schleicher
Mr./Mrs. Carl L.A. Beckers
Mrs. Jerome F. Kircher, Jr.
Mr./Mrs. Harry Wuertenbaecher, Jr.
In Memory of Sidney M. Shoenberg
Arthur A. Dunn, Jr.
In Memory of Dr. H. E. Wiedemann
Charles S. Fox
August H. Homeyer
R. M. Morriss, Jr.
Gerald F. Pauley
Leo G. Peck
Arthur S. Schwarz
Benjamin E. Thomas

NEW HENRY SHAW ASSOCIATES MEMBERSHIP MARCH 1976

Miss Harriet J. Tatman

NEW SUSTAINING MEMBERSHIP MARCH 1976

Mr./Mrs. Wm. F. Klipsch, Jr.

NEW CONTRIBUTING MEMBERSHIP MARCH 1976

Mr./Mrs. Melvin T. Rector

NEW REGULAR MEMBERSHIPS MARCH 1976

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Mr./Mrs. Lowell R. Andrew
Mrs. May Ault
Mr./Mrs. Charles F. Baker
Mr./Mrs. Denis Ball
Mr./Mrs. Stuart A. Bartfeld
Drs. Ronald / Pamela Beach
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INCREASE IN MEMBERSHIP CONTRIBUTIONS MARCH 1976

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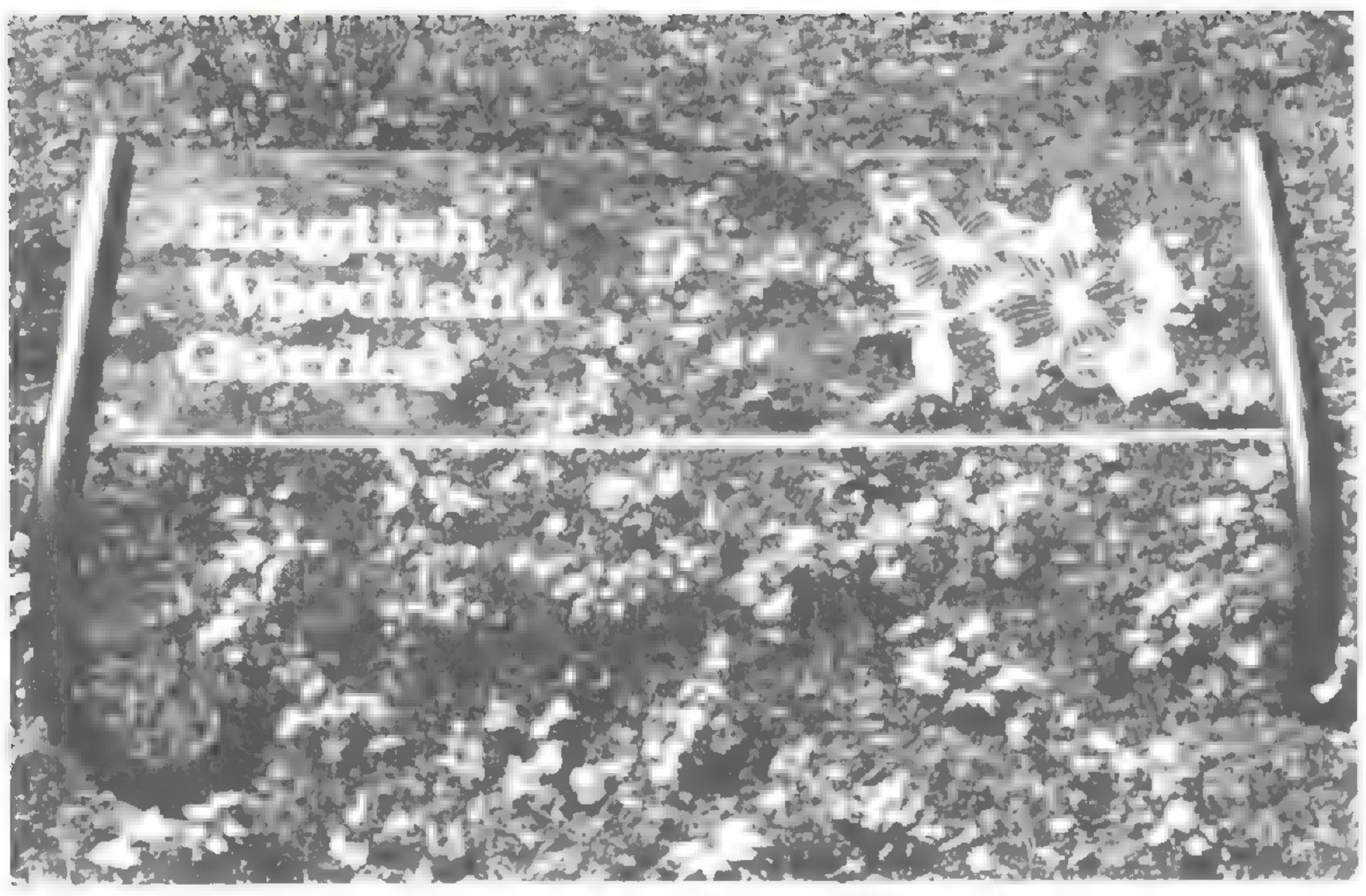

English
Woodland
Garden

Volume LXIV Number 6
June 1976

Heritage and History

Frank Meyer — A Colorful Contributor to Advancement of Botany

Frank Nicholas Meyer was born in 1875 in The Netherlands. From childhood he had a great interest in plants and developed a love for travel, preferably on foot. At one time in his youth he walked from Holland to Italy and nearly lost his life in the Alps. Before he came to the United States in 1900, he worked as head gardener for the famous botanist Hugo De Vries in the Amsterdam Botanic Garden. From 1900 to 1905, when he joined the staff of the United States Department of Agriculture, he traveled throughout the southern United States and northern Mexico, on foot. From July, 1904 until July, 1905 he worked at the Missouri Botanical Garden, presumably also as gardener/horticulturist. On July 29, 1904, he wrote to friends: "At last I found a nice position again. I am going to work next Monday in the Missouri Botanical Gardens. I hope it will be satisfactory on both sides. It is a good thing I got this place, for financially I am in pretty bad shape."

While he was at the Garden he came to the attention of Dr. David Fairchild of the Office of Seed and Plant Introduction of the United States Department of Agriculture, Washington, D.C., who was looking for a qualified man to send to China for the purpose of collecting seeds and cultivated plants. Frank Meyer seemed to fill the bill. He was trained in botany, loved to travel, was a good linguist and even a Buddhist! He was selected to go plant collecting in eastern Asia. This was a newly created position with a look to obtain seeds and plants for a greater and hardier variety of grains, fruits and vegetables for the colder parts of the United States.

Frank Meyer made four trips to China and stayed each time approximately three years. He introduced into the United States a large number of species of food and ornamental plants which had not been cultivated here before. He discovered the maidenhair tree (Ginkgo biloba), he found a new lilac (Syringa meyeri) and all in all introduced more than 2,000 species of useful and ornamental plants.

On his last trip to China he was caught up in the civil wars and confined for several months in Ichang. In May, 1918 he was able to escape and to walk to the village where he had previously stored his baggage and collections, and finally caught a boat to Hankow. He never arrived there. He disappeared from the steamer during the night of June 1 to 2, 1918 and his body was later found 30 miles above Wu-hu. It was never determined whether he fell from board, was pushed or possibly committed suicide.

Photo Courtesy of Hunt Institute for Botanical Documentation)

Dr. John L. Creech, Director of the United States National Arboretum, Washington, D.C., who visited China last year, intended to look for Frank Meyer's grave in Shanghai. He was driven by the site of the Bubbling Wells Cemetery; however, the cemetery had been abandoned and turned into a public park. Dr. Creech found the small cemetery church still intact, but nothing remained of the grave sites and he was not permitted to enter the grounds.

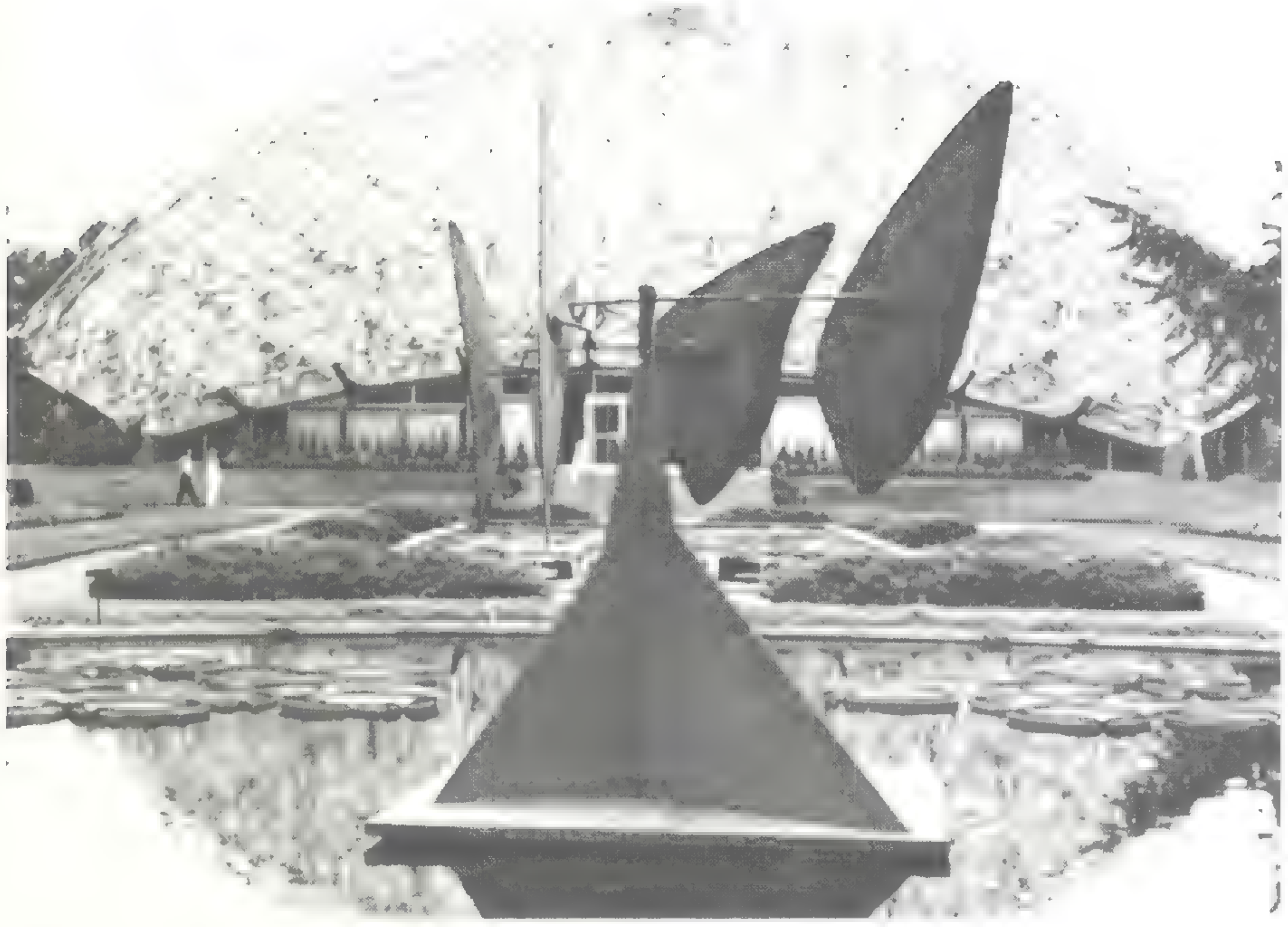
Carla Lange
Assistant Librarian

FRONT COVER

The English Woodland Garden *was dedicated as a Bicentennial project during outdoor ceremonies on Tuesday, May 4. After Dr. Peter H. Raven, Director of the Missouri Botanical Garden, welcomed over 400 invited guests, Mr. Tom K. Smith, President of the Board of Trustees, introduced Missouri Governor Christopher S. Bond, who delivered remarks, and Professor John Heslop-Harrison, Director of the Royal Botanic Gardens, Kew, England, who presented the dedication address.*

After the dignitaries cut the red-white-and-blue ribbon, officially opening the new two-acre garden, guests walked along its shaded pathways and proceeded to a reception near the Lehmann Building. Mr. H. Parker Smith and Mrs. Shadrach F. Morris were co-chairmen of program events for the day.

The English Woodland Garden was designed by John E. Elsley, Curator of Hardy Plants at The Missouri Botanical Garden.



The Alexander Calder Sculpture, "Five Rudders," will be displayed in the lily pond this summer, courtesy of the Steinberg Gallery at Washington University, Graham W. J. Beal, Director.

DONATIONS BEING SOUGHT FOR PURCHASE OF PORTRAITS OF FAMOUS BOTANISTS

The Garden's Library has recently been offered an outstanding collection of portraits of famous botanists from the period 1750-1840. There are more than fifty portraits in this collection of engravings and lithographs, including twenty-five rare portraits of Linneaus, the Swedish botanist who first systematized botanical description. The prices for individual portraits range from $10 to $175 each, with the total collection being priced at $4,000. Donations are being sought to purchase all or part of the collection for addition to our already substantial group of botanical portraits. Members interested in contributing toward the purchase of these materials are invited to contact Dr. Peter H. Raven, Director, or James Reed, Head Librarian. Contributions to the Garden are tax deductible.

Cactus Society Show Aug. 28 — Sept. 6

The Henry Shaw Cactus Society will hold its annual show in the Floral Display House from Saturday, August 28, through Monday, September 6. Hours are from 2 p.m. to 5 p.m. on August 28 and from 9 a.m. to 5 p.m. all other days except September 6, when the show closes at 4:30 p.m.

The theme will be "Americana," and cacti and succulents of the American scene will be featured. Arrangements, decorative classes, specimen plants, educational and junior classes will be displayed. Society members will give programs on the culture of cacti and succulents on Monday through Friday.

Plants will be available for purchase, as will soil mixture, stationery, macrame hangers and other items relating to the hobby of cultivating cacti.

Jack D. Pavia, Garden Staff Member, Dies

A valued employee of the Garden, whose competent, genial service ranged from being Santa Claus at parties for Members' children to performing intricate tasks in maintaining Garden equipment, died of a stroke on March 23.

He was Jack D. Pavia, age 49.

Jack joined the maintenance staff in 1963, left for a time for other employment, then returned in 1965 to take up residence at the Garden with his wife, Connie, and their daughter Jackie. Other survivors include three married daughters and five grandchildren.

A native of St. Louis, Jack attended Central High School and served in the United States Navy for 19 years. He was decorated for military service in both World War II and the Korean War.

Jack gave of himself to the Garden with as much dedication as he served his country. Although his official duties were in Maintenance, and he responded swiftly to myriad calls for mechanical assistance from all departments, he rendered special help at social and cultural functions, particularly those of the Members Department. Exchanging his work-a-day uniform for a spiffy red sports jacket, tie, white shirt and slacks. Jack oversaw behind-the-scenes operations at Preview Parties, helped direct the flow of people traffic, assisted television crews with electronic equipment, and tended bar with expertise and . . . his ever-engaging smile.

Jack's service to the Garden is an example long to be remembered. He will be sorely missed by his colleagues, family and friends.

Jack Pavia, right, enjoyed helping out at all Garden functions. This 1972 photograph shows him with Maintenance Head Jim Hampton festively preparing food at the Staff Picnic.

GARDENING IN JUNE

This month, the garden is now coming into its full glory; annuals planted earlier are now beginning to bloom. Many of the perennials that flowered earlier have stopped flowering and should be pruned back. Many of the low growing early flowering perennials need to be cut back severely, such as, Alyssum, Arbis, Rock cress, and Candytuft, to insure new bracts and keep the plants very compact and neat looking.

Where gaps exist on the border, annuals still may be set out or in many of these areas, can be planted by seed direct using some of the Marigolds and Zinnias which come on so well from seed sown direct and other early flowering annuals. Many of these will flower in 6 to 8 weeks giving continual bloom in areas that would otherwise be bare and open to weed growth.

More mulching should be applied to all parts of the garden, particularly to vegetable areas to control weeds and moisture as well as soil temperatures.

Remember to remove faded or spent blooms from the roses cutting back where necessary to reshape the plant and to encourage stronger, better growth.

Perennials should not be allowed to go to seed unless seed is wanted to start new plants, otherwise it tends to weaken the plants.

The Month To Prune

This is an ideal month to consider pruning; hedges, evergreens and deciduous types trimmed in formal fashion should now have the growth cut back to the desired height and shape. Remember to keep all hedges wider at the base and narrow toward the top so that they have the advantage of full light and rain which should come occasionally.

Pruning of all early flowering shrubs should be completed as soon as possible. In some cases, remove one or two of the older canes from Forsythia, Quince, Mock Orange, and others so that over the period of the next two or three years you renovate your shrubs completely encouraging new growth and controlling the height. Remember in pruning to make select cuttings at various heights rather than giving that crew cut appearance.

Pruning of trees, including fruit trees, can be done this month. Now that they are in full leaf, it is a matter of pruning out the water or soft growth or some thinning thinning to allow for better light and aeration through the plants.

Liquid Fertilizer

Liquid fertilizing may now be needed in various parts of the garden to stimulate added growth. Roses which have peaked with the first lot of bloom may benefit by a liquid feeding. In applying liquid fertilizer, follow the recommendations and apply liberally around the base of the plants. Powder fertilizer should be applied carefully around the plants and then watered in immediately; if it is allowed to sit on the plants, it will cause burning.

Container grown plant material, such as roses, shrubs and even small trees can be set out as long as the roots are not disturbed and the plants are watered in well. Again, be sure to dig the holes twice the size needed supplying good soil with equal amounts of organic matter and no fertilizer. Mulching heavily with 3 to 4 inches and keeping them watered at regular intervals will give good growth later in the season.

Container grown plants need not only regular waterings, but extra feeding to keep them in good condition. Flowering annuals should be fertilized at least once a week, when the soil is moderately moist.

Trees and shrubs in containers should receive regular feedings up to the first of August. These have limited root growth and therefore use up fertilizer much faster. Normal trees and shrubs grown outdoors should not be fertilized after the first of June because too much growth may be stimulated and cause the plants not to harden off in the fall.

Container grown material, on the other hand, uses up fertilizer very rapidly and will harden off properly fertilized plants up to the first of August.

'Rose Evening' on Friday, June 4; Preview Party and Dedication of Lehmann Rose Garden

"Rose Evening," a preview party for Members of the Garden, will be held Friday, June 4, from 5:30 to 7:30 p.m.

The party, which will be presented on the Garden grounds where Members can stroll among the luxuriant, blooming rose displays, is sponsored by Aspen Amercian Motors Corporation/Jeep, Inc., 3600 S. Kingshighway.

There will be refreshments and special entertainment

The highlight of the evening will be the dedication of the Lehmann Rose Garden, honoring Mrs. John S. Lehmann, at 6:15 p.m.

"Rose Evening" is the premiere Members' event of the Garden's rose season, which opens following the two-day show, on Saturday, May 29, and Sunday, May 30, of the Rose Society of Greater St. Louis,

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M. P. CRONIN, Editor

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$5.00 per year. $6.00 foreign.

How Many Botany Books Did Thomas Jefferson Own?

by Joseph Ewan

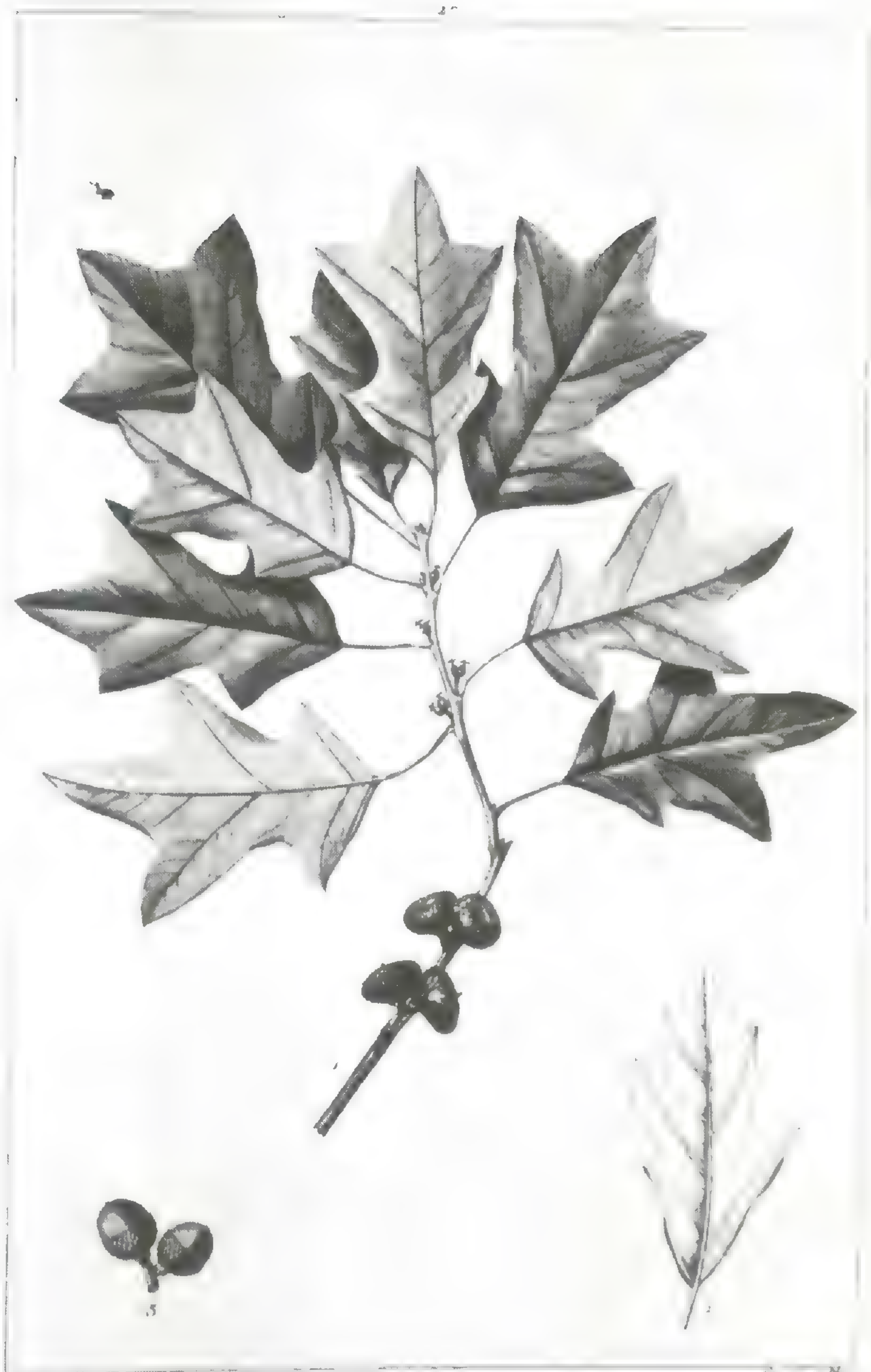
HISTOIRE
DES CHÊNES
DE L'AMÉRIQUE
A PARIS,
PLANTARUM

Five botany books that Jefferson owned shown here in matching copies. Humboldt's classic on plant geography in the foreground. Michaux's folio on American oaks and Tournefort's ***Institutiones,*** *opened at title pages. Persoon's* ***Enchiridium*** *in two volumes, topped by Miller's* ***Gardener's Dictionary,*** *eighth edition.*

"I rank [botany] with the most valuable sciences," wrote Thomas Jefferson," whether we consider its subjects as furnishing the principal subsistence of life to man and beast, delicious varieties for our tables, refreshments from our orchards, the adornments of our flower-borders, shade and perfume of our groves, materials for our buildings, or medicaments for our bodies." From this quotation you will see that Jefferson was looking at botany not so much thru the hand-lens as with the paring knife and market basket. He did come to the recreational view when he said "no country gentleman should be without what amuses every step he takes into his fields." He has often been called a Renaissance man, devoted to the antiquarian as well as the novel, and he was certainly the "scientific scout for America." Of all the sides of Jefferson his botanical interests have been little noticed. Millicent Sowerby, his bibliographer, summed up when she wrote, Jefferson "never ceased to grow, and consequently our knowledge of him can never be considered complete." Imagine receiving 1267 letters in one's 77th year alone! And he lived six years after that.

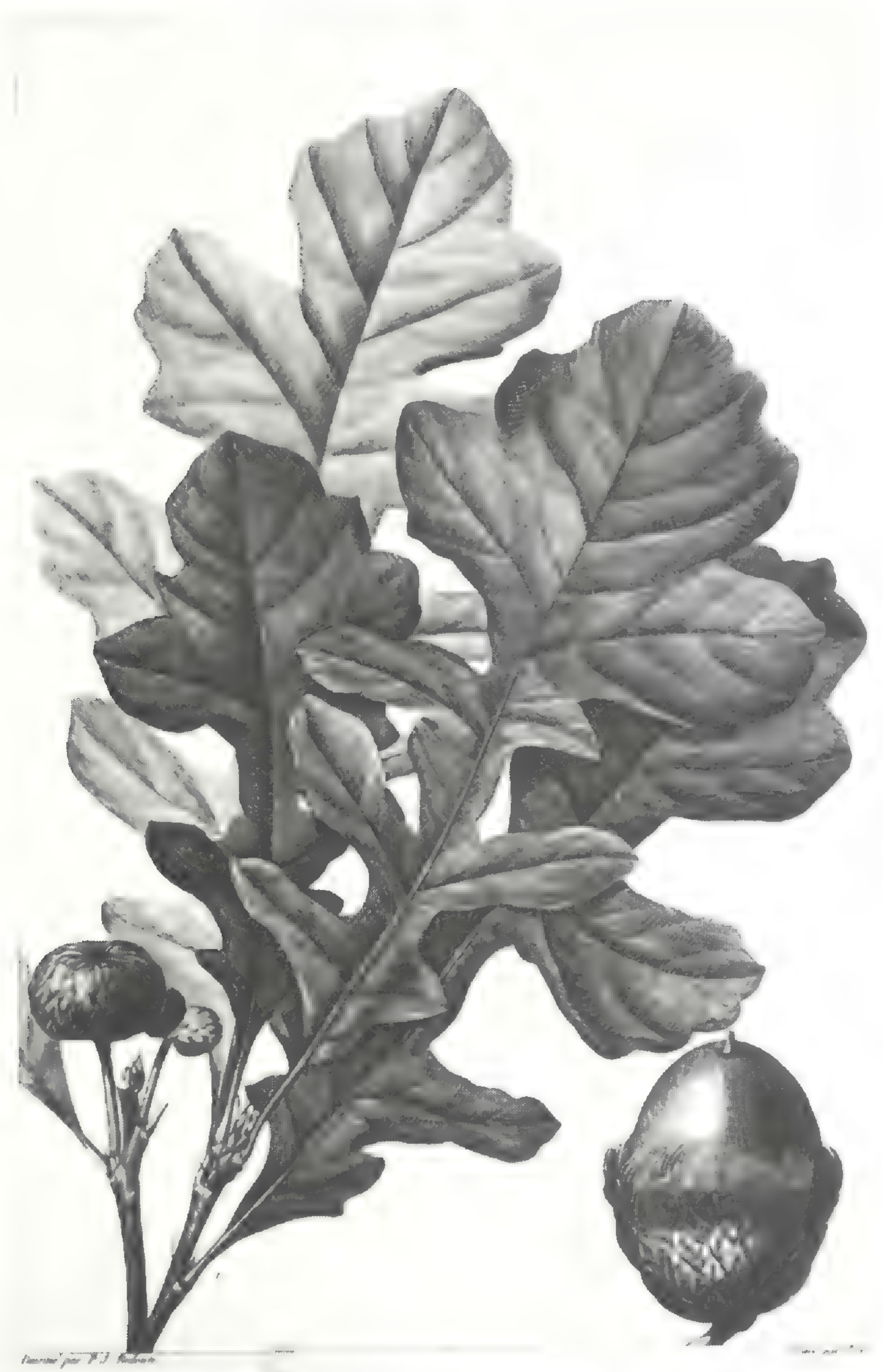
Jefferson — A Bibliophile

If you would know a man's real interests, inspect his library. Jefferson bought books, directly and through his agents and friends; he sought out particular editions, and solicited help from his overseas correspondents to keep him informed — he was a bibliophile. And yet he did not buy antiquarian items for their own sake, but collected botany books to read and to consult. He did not use a bookplate but initialed his books internally at the signature marked "I" (since the J was not in use), and at "T", and so perhaps copies of Jefferson's books may still be overlooked. From his handwritten catalogue of 1783, and the printed catalogue prepared in November 1815 at the time of the sale of his books to the Library of Congress, which was being started anew after the British had burned it in the War of 1812, and from records of his letters, etc., Miss Sowerby reconstructed a collection of nearly 5,000 volumes. Another tragedy came in 1851 when fire in the Library of Congress destroyed 2/3 of his books. Of all the botany books Jefferson had owned, only one title, Muhlenberg's *Catalogus* of 1813, survived. When Miss Sowerby was compiling the 5-volume inventory of Jefferson's library I talked with her about the history of his collection. She believed that those books not burned in that 1851 fire were picked up and carried off, or were so water soaked as to have been discarded. This sale of 1815 had been of his second library. Jefferson's first library was destroyed in 1770 — he was 27 then — when his mother's mansion burned. As Randolph Adams has commented, "it almost seems as though some ghostly pyromaniac had pursued Mr. Jefferson all of his days." After he had sold his second library he began selecting 8000 titles for his planned University of Virginia, and half of these were lost in the burning of the Rotunda in 1895. This detail is to underline Jefferson's enthusiasm for books.


QUERCUS Baniſteri.

Linnaeus Has Largest Representation

The whole story of Jefferson's botany books cannot be told here — only some remarks on the 38 botanical titles, these apart from books on horticulture or agriculture, two subjects he also read and collected with vigor. Sixteen of his botany books were in Latin — dating from a 1549 Dioscorides to Muhlenberg's check-list of American plants, the presentation copy that I mentioned above as having survived. He purchased a 1644 Theophrastus, a 1769 Oeder, a 1731 Boerhaave, and the 3-volume 1719 Tournefort *Institutiones.* The botanical author with the largest representation was Linnaeus — nine titles, including the *Critica* and the *Flora lapponica,* both published in 1737. Other Linnaean items in Jefferson's library were the 1763 *Philosophia,* 1764 *Genera,* 1762 *Species plantarum,* 1786 *Fundamenta,* 1771 *Mantissa,* and two English language titles, the 1782 *Svstem* and 1785 *Sexes of plants,* edited by James Edward Smith. This exceptional collection of Linnaeana, surely the largest private collection in America by 1815, was due to his



The celebrated Redouté and his brother Henri-Joseph drew the oaks for Michaux's memoir; the overcup oak, above, and Banister's, on the left. Michaux based the name on Banister's description of a dwarf Virginia oak.

purchase of Rev. Samuel Henley's books in 1785. Henley taught at the College of William and Mary but returned to England on the eve of the Revolution. His interest in Linnaeus may have been related to his studies of biblical commentary. I cannot discover that Henley ever wrote a paper on his evident interest in Linnaeus.

Of the 13 books on botany written in English which Jefferson owned, nine were purchased, including Parkinson's *Theatrum* of 1640 — someone may discover Jefferson's ownership recorded in this book still rather common today. He owned the New York imprint of Erasmus Darwin's *Botanic Garden* 1798, and Rousseau's *Letters on the Elements of Botany* (1785). On April 24, 1786, Jefferson visited James Lee's nursery at Hammersmith then outside London, purchased American plants for a friend in Tours, and evidently acquired the nursery catalogue of 1784 on that visit.

That Jefferson was not keenly aware of color values in plates of different editions is shown by the fact he owned the first edition of Catesby's *Natural History*, which carries the plates done under Mark Catesby's own supervision, and exchanged it in 1789 for the second edition. Singularly in *Notes on Virginia* Jefferson mentions that the "coloring [of the second edition] . . . is generally too high," and, indeed, that is true when copies of the first, second, and third editions are compared side by side.

Jefferson gave his philosophy of book collecting to the Baltimore bookseller, William Fleischer, "my own collection furnishing things *old* and my time not permitting me to read but what is *good*. The title will enable me to judge whether the subject interests me."

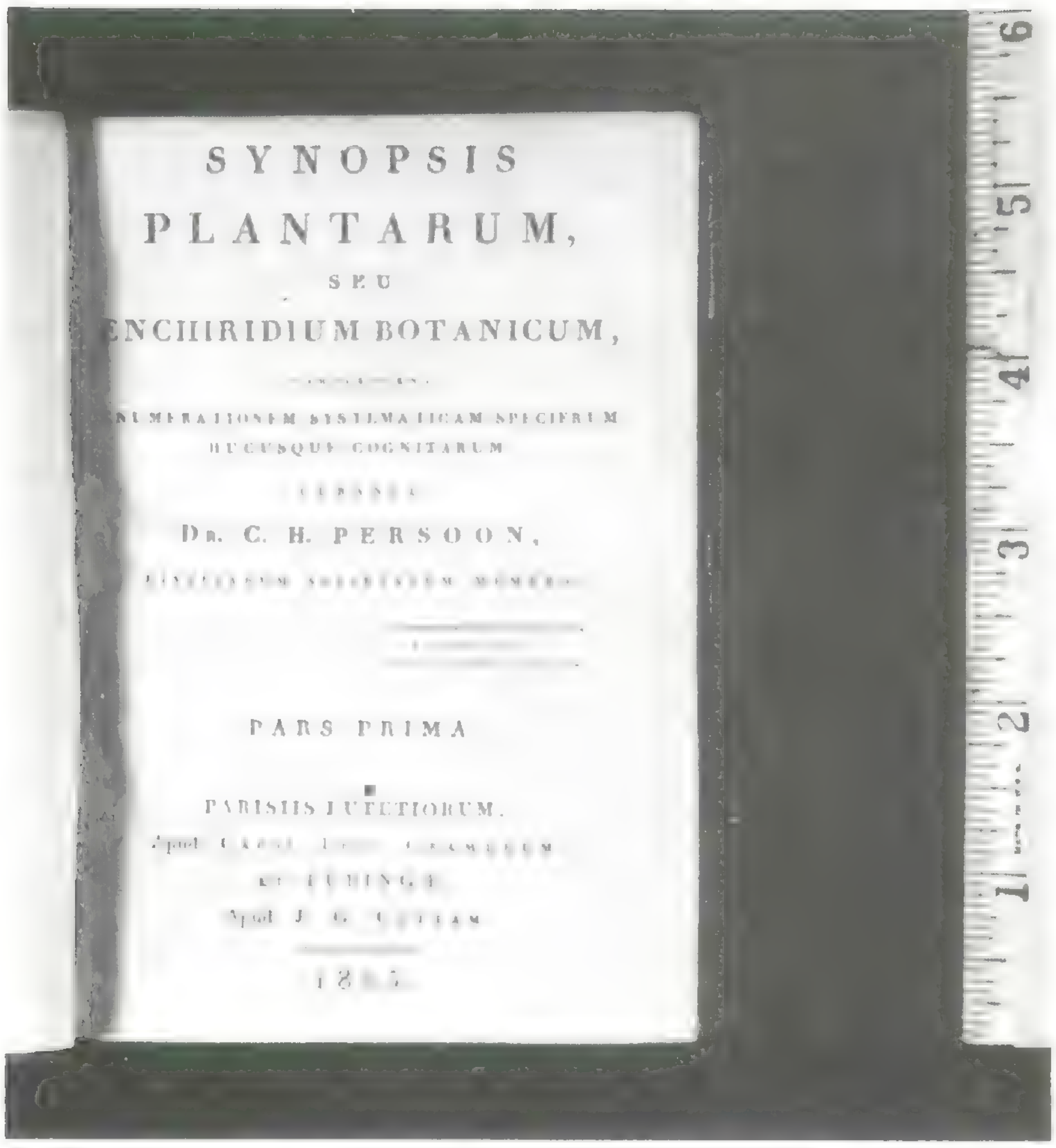
Some of the books Jefferson owned are known solely from his record. John Randolph, Jr. a kinsman, published a *Treatise on Gardening* in Richmond in 1793, but no copy is known today. John Gardiner, a Georgetown publisher, reprinted Randolph's text within his own *American Gardener* in 1818. Did Gardiner once own a copy of Randolph's *Treatise* from which he took the text? Another puzzle is what edition of Valmont de Bomare's *Dictionnaire d'Histoire Naturelle* Jefferson owned for in his manuscript catalogue he recorded *nine* volumes in duodecimo but no such edition of that little consulted but highly useful reference work is known.

Among Jefferson's books there is a lost *hortus siccus* assembled by Captain Jacob Crowninshield of Salem, who sailed the seven seas from 1790 to 1796, visiting the West Indies, Calcutta, and Mauritius. He brought back the first live elephant to be seen in the United States in April, 1796, but at thirty one he docked his ship for politics. Crowninshield went from the Massachusetts State senate to United States Congress but he died at thirty eight while Congress was in session. After his death a dried plant collection was sent to Jefferson by their mutual friend, the Unitarian Rev. William Bentley, who also sent drawings made by Miss Crowninshield. We know only Jefferson's description of both the herbarium and the drawings: "I have certainly never seen anything, in either way, equally perfect, and I esteem them as models which will not, I believe be exceeded."

What of Jefferson's Knowledge of Botany?

But what of Jefferson's actual knowledge of botany? Was he interested in botanical detail? He included 129 plants in his *Notes on the State of Virginia* published in Paris in 1784-85. He had based his identifications on Gronovius' *Flora Virginica,* second edition, which in turn had been based on the researches of Virginia's two pioneer botanists, John Banister and John Clayton. There was a copy of *Flora Virginica* in his purchase of Rev. Henley's library in 1785, but that was in Virginia, and he was then in Paris. That suggests he must have used a library copy. We know he bought a second copy of *Flora Virginica* from his Paris bookseller in 1787.

Although we cannot now gain firsthand answers from annotations that he may have made in his own



SYNOPSIS
PLANTARUM,
SEU
ENCHIRIDIUM BOTANICUM,
NUMERATIONEM SYSTEMATICAM SPECIERUM
HUCUSQUE COGNITARUM
Dr. C. H. PERSOON,
PARS PRIMA
PARISIIS LUTETIORUM.

Persoon's ***Synopsis*** *or* ***Enchiridium*** *was a remarkable attempt to digest the world's floras in two closely printed handbooks.*

copies, we do see that his interest moved him to *purchase* four-fifths of the botany books in his library. Jefferson's understanding of botany and particularly plant classification may be seen in a persuasive letter he wrote to Dr. John Manners in 1814 evidently in reply to his correspondent's query as to why Jefferson would cling to the Linnaean artificial scheme of classification over the natural system of Jussieu which was then being talked about. "I adhere to the Linnaean [system]," Jefferson wrote, "because it is sufficient as a groundwork; admits of supplementary insertions, as new productions are discovered, and mainly because it has got into so general use that it will not be easy to displace it." He listed three advantages offered by the Linnaean system: first, of aiding the memory to retain a knowledge of plants, secondly, "of rallying all to the same names for the same objects, so that [one] could communicate understandingly on them," and, thirdly, of enabling the inquirer to trace an unknown by its characters "up to the conventional name by which it was agreed to be called." "Linnaeus' method was received, understood, and conventionally settled among the learned and was even getting into common use. To disturb it then was unfortunate, the new system attempted in botany by Jussieu [is a] subiect of the same regret . . . Wildenow and Persoon have incorporated into Linnaeus the new discovered plants." Jefferson's position in science may be called that of a cautious liberal, "with an evident reluctance at times to break with obsolescent beliefs." He accepted Linnaeus for the practical use that the scheme of counting stamens and pistils for identification could offer. Jefferson was always motivated by the pragmatic, the functional, in such matters. It is reasonable to think he examined the nine Linnaean titles he owned and was impressed, as others of his contemporaries were, with the appeal of the sexual system.

For botanical questions Jefferson most frequently consulted Philip Miller's *Gardener's Dictionary,* eighth edition, which followed the Linnaean arrangement. Humphry Marshall twenty years later also arranged his inventory of American trees by the Linnaean scheme. When writing to William Randolph in Boston on the plan for a botanic garden for a public school, Jefferson advised that any method for classifying plants "cannot be but artificial, that of Linné is good enough and easy." Nomenclature was not to be confused with the "true science" which groups plants by "different orders of affinity in which nature has distributed them." "It is incredible" he added, "what consequence this new study [Jussieu's Natural System] has had in so short a time, on all the arts that depend upon the knowledge of vegetables." It was just about the year of Jefferson's death, 1826, that John Torrey first used the Natural System in an American botany book.

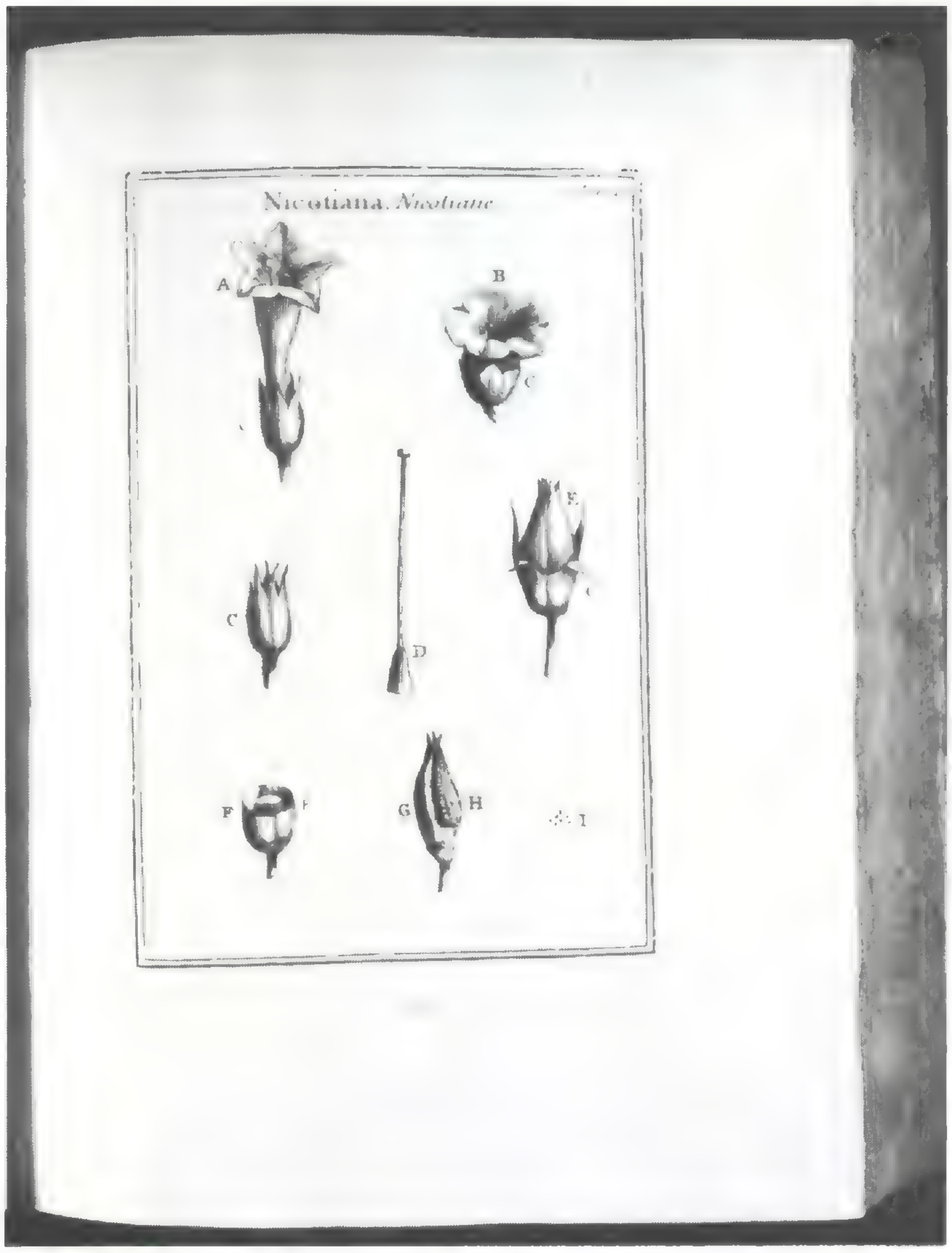
Jefferson and Benjamin Smith Barton

Like "pictures at an exhibition" let me select authors who presented copies of their botanical writings to Jefferson and sketch in their backgrounds. Benjamin Smith Barton was the best-known native American botanist, a friend of Jefferson's, and his associate in the American Philosophical Society. On at least one occasion he borrowed Jefferson's copy of Persoon's *Enchiridium.* Jefferson selected Barton to prepare the natural history report for the Lewis and Clark expedition, but Barton died in 1815 at the age of 49 before succeeding. Barton shared Jefferson's enthusiasm for books, and like him, was a voluminous correspondent. He was the author of the first textbook of botany published in the United States. In 1798 Barton dedicated his *New Views* with the declaration "I know not that any person has paid so much attention to the subject [which this book] involves.. . . I am confident, from my personal acquaintance with you, that you are anxious for the discovery of the truth, and ardent to embrace it, in whatever form it may present itself. It is the jewel which all good and wise men are in pursuit of. It is the *punctum saliens* of science." When in 1792 Barton proposed the genus *Jeffersonia,* he insisted he had "no reference to [Jefferson's] political character, or to his reputation for general science, and literature. My business," Barton said, "was his knowledge of natural history. In the various departments of this science, but especially in botany and in zoology, the information of this gentleman is equalled by that of few persons in the United States." After the return of the Lewis and Clark party from the Pacific Northwest Barton asked Jefferson if, pursuant to his continuing interest in Indian languages, he could furnish a sample of Pawnee vocabulary. We know that Barton visited Monticello at least once, for on Sept. 22, 1806, Robert Fulton wrote Charles Willson Peale that Barton was "philosophizing with the President" there. In August, 1808, when the President's grandson, Thomas Jefferson Randolph, was to be sent to Philadelphia "to attend lectures in those branches of science which cannot be so advantageously taught anywhere else in America" he asked Doctors Wistar and Barton if lodging might be had for him among the faculty there. It was the practice for some members of the University of Pennsylvania faculty to take in selected students during the lecture period; whether Dr. Barton ever replied we do not know, but Dr. Wistar wrote Jefferson that Charles Willson Peale would accept Mr. Randolph as a "boarder." For a 12 dollar fee the grandson enrolled in a natural history course with Dr. Barton that Fall and for 20 dollars, for anatomy "with benefit of actual dissections" with Dr. Wistar. Jefferson wrote Barton, October 12th, 1808, that his grandson's "natural turn is very strongly to the objects of [Barton's] courses." Jefferson was dismayed at the protracted delays in the appearance of the Lewis and Clark natural history discoveries. In April, 1813, he asked Barton, "when shall we have your book on American botany, and when the 1st volume of Lewis and Clarke's travels?" But Barton, who suffered from alternate bouts with gout and with the University of Pennsylvania faculty, could not satisfy Jefferson's hopes, and in a letter to Alexander von Humboldt in December of that year, Jefferson lamented "the botanical and zoological discoveries of Lewis will probably experience greater delay, and become known to the world through other channels before that volume will be ready."

Jefferson had a special friendship for Bernard M'Mahon, the Philadelphia nurseryman, whom he had delegated to watch over the plant novelties brought back by Lewis and Clark. Jefferson divided the seeds between M'Mahon and William Hamilton who maintained an estate garden called the Woodlands now in present day Philadelphia. M'Mahon presented a copy of his *American Gardener's Calendar* (1806) to Jefferson who replied he had no doubt "it will be found an useful aid to the friends of an art, too important to health and comfort and yet too much neglected in this country." Jefferson bought a second copy of the *Gardener's Calendar* two years later for $3.50.

French Correspondents

"I have never seen a reason why every farmer should not have a sugar orchard, as well as an apple orchard," Jefferson wrote to a correspondent in France in 1808. An advocate of maple sugar through his lifetime, Jefferson joined with Dr. Benjamin Rush in stressing the advantages of its use in a paper published by the American Philosophical Society. Maple sugar was used exclusively at his Monticello table. François Michaux, could furnish plants and seeds of the sugar maple. It was Francois' father, André, who introduced *Albizzia,* called "Silktree" by Jefferson. And André was to lead a western reconnaissance in 1792 only to be suspected a French spy and recalled. The son François evidently enjoyed Jefferson's friendship over the years. François gave Jefferson a copy of his natural history of forest trees. With his thanks Jefferson remarked, "I sincerely wish . . . that the citizens of the United States may not be wanting in due encouragement to it. Nothing should be spared which I could do to befriend it." During Jefferson's Paris years he visited private cabinets and royal collections, and sought the prominent figures in natural history, Buffon, Daubenton, Lacèpedé, and particularly André Thoüin and Madame Noailles de Tessé, cousin of Lafayette. Her letters — and there were more botanical letters between them than any other French correspondent — often included plant lists, desiderata, and exchanges of seeds for her "botanical paradise." Jefferson gave Monroe, who was then on a mission to Paris, and whom he identified as "my close, my best friend, & the honestest man on earth," a letter to deliver, confiding, "I own, my dear Madame, that I cannot but admire your courage in undertaking now to plant trees. It has always been my passion; insomuch that I rarely ever planted a flower in



Tournefort's dissections of flowers — tobacco, for example — clarify the characters of plant families.

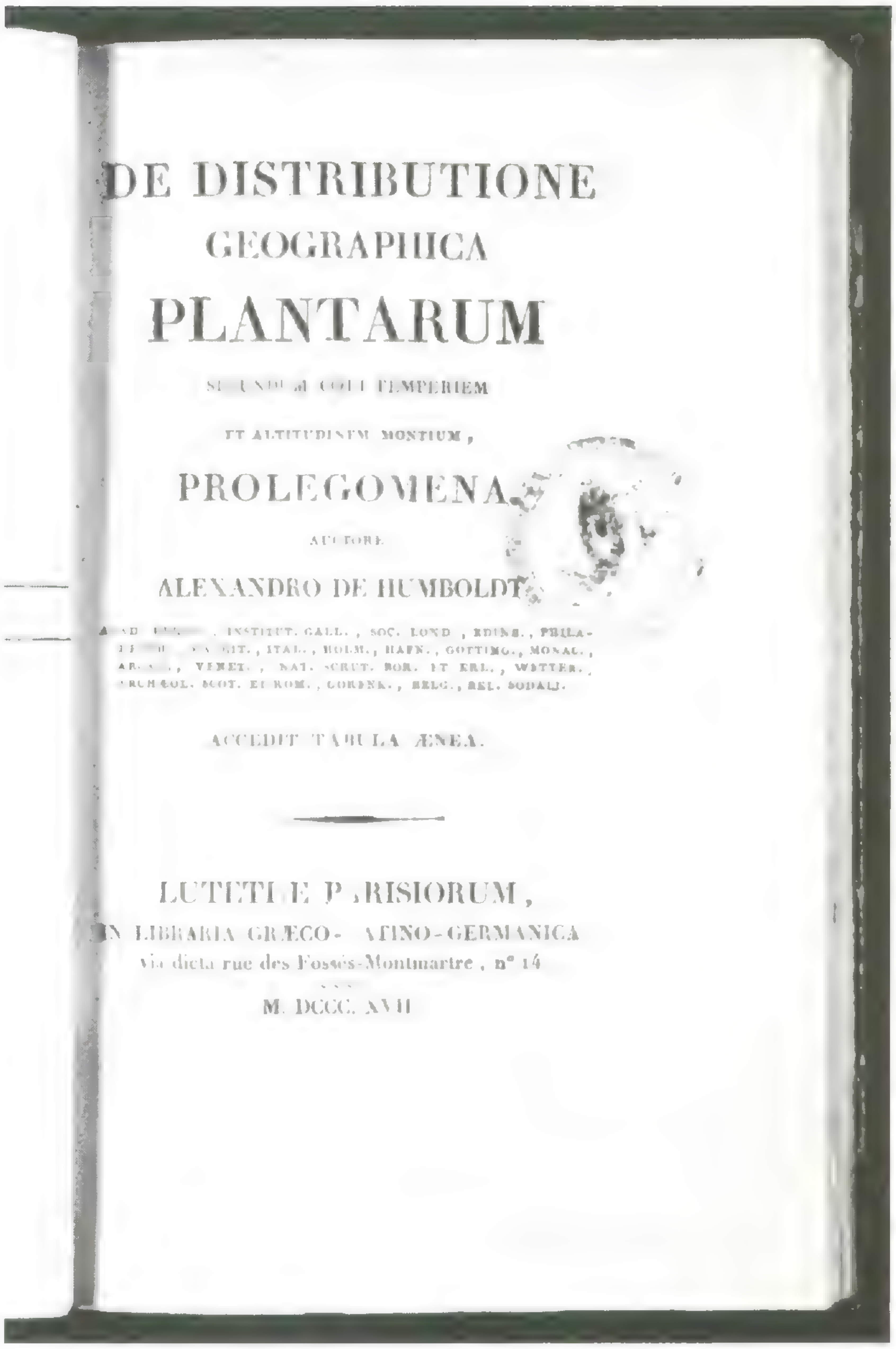
my life." He added, "I believe I shall become a florist" after returning to Monticello. The War of 1812 with its blockade of Philadelphia interrupted the exchange of seeds and books with his French correspondents, but Thoüin's parcel of seeds arrived and was sent on to M'Mahon since Jefferson felt that the chances for their successful cultivation was greatest under M'Mahon's care. On one occasion Thoüin, "a great admirer of America," sent Jefferson 700 species. Clearly this was one of the chief avenues of horticultural exchange between France and America in this era.

Other French connections included Raffeneau-Delile, onetime vice consul at Wilmington, North Carolina, whose writings on the Egyptian flora are classic. Then there was Palisot de Beauvois, described by Jefferson as a "literary friend and acquaintance of mine," who under patronage of the Quaker physician, Caspar Wistar, prepared a catalogue of Peale's museum in Philosophical Hall. Palisot de Beauvois first visited Philadelphia in 1791 after tramping about Benin and Old Calabar for fifteen months, sending plants and insects to Jussieu, and barely escaping fatal bouts of fever. Palisot de Beauvois is hardly typical of the closet botanist: teacher of French, musician who played in a circus troop, who was shipped with slaves across the Atlantic, survived a protracted voyage to Haiti, and who escaped execution there by the intercession of a mulattress. Who says systematic botany is dry as dust?

Today with botanical libraries pretty generally accessible to us it is hard to imagine that in 1810 there was one copy of Persoon's *Synopsis plantarum,* often called the *Enchiridium,* in the United States and so when Jefferson was presented with a copy by the author, Dr. Barton asked to borrow the duodecimos. When Jefferson posted the Persoon to Barton he explained that he was sending one volume at a time so as not to burden the mails! Dr. Barton proved the rule when five years later Jefferson had to write to Barton requesting its return.

Alexander von Humboldt

There were also Germans in Jefferson's coterie of bookmen. Alexander von Humboldt was introduced to Jefferson at the infant Washington capital by Dr. Wistar in 1804. Jefferson was delighted with Humboldt, as was Dolly Madison, who wrote her sister, "we have lately had a great treat in the company of a charming Prussian Baron von Humboldt. All the ladies say they are in love with him, notwithstanding his want of personal charms. He is the most polite, modest, well-informed and interesting traveller we have ever met, and is much pleased with America." He was Jefferson's house guest and one morning he found Jefferson on the floor romping with his grandchildren. For a few moments Jefferson did not notice Humboldt standing there and when he stood and shook hands with him he said, 'You've found me playing the fool, Baron, but I'm sure I don't need to make any apology to you.' Years later Jefferson opened Humboldt's gift copy of his *Tableaux de la Nature* (Paris, 1808), and after that, his little classic on plant geography. Jefferson told Dr. Wistar that Humboldt's "treasures of information are inestimable, and fill us with impatience for their appearance in print."



DE DISTRIBUTIONE
GEOGRAPHICA
PLANTARUM
SECUNDUM COELI TEMPERIEM
ET ALTITUDINEM MONTIUM,
PROLEGOMENA
AUCTORE
ALEXANDRO DE HUMBOLDT
[illegible], INSTITUT. GALL., SOC. LOND., EDINB., PHILA- [illegible], ITAL., HOLM., HAFN., GOTTING., MONAC., [illegible], VENET., NAT. SCRUT. BOR. ET ERL., WETTER., ARCHÆOL. SCOT. ET ROM., [illegible], BELG., REL. SODALI.
ACCEDIT TABULA ÆNEA.

LUTETIÆ PARISIORUM,
IN LIBRARIA GRÆCO-LATINO-GERMANICA
via dicta rue des Fossés-Montmartre, n° 14
M. DCCC. XVII

Humboldt's expanded essay on plant distribution of 1817, one of his gifts to Jefferson, included a chart of vertical zonation of vegetation that was to stimulate new topics of investigation.

One booknote on Humboldt: Jefferson presented his copy of Playfair's *Geometry* but failed to inscribe the book. Humboldt wrote, "you will admit, [this] may cause me some embarrassment later." The failure of dealers to record the proper release of duplicate books they have acquired from libraries distresses me. I find my sympathies with Humboldt.

William Roscoe of Liverpool

William Roscoe was born in Liverpool in 1753, the year that Linnaeus's *Species plantarum* appeared in Stockholm. Roscoe was the son of an innkeeper and market gardener, who as a lad enjoyed fishing along the banks of the Mersey, was apprenticed to a bookseller, and before he was twenty had published poetry which was praised by Sir Joshua Reynolds. At 35 Roscoe entered politics as a critic of slavery, meanwhile finding time to write two biographies: of Lorenzo de Medici, and of Pope Leo X. Roscoe's botanical interest came when he was nearing fifty, fostered by James Edward Smith, founder of the Linnean Society. As a public citizen of Liverpool Roscoe was responsible for the opening of the city's botanic garden, and it was a copy of the garden *Catalogue* that he gave to Jefferson. It was hand delivered by John Bradbury, who visited St. Louis to and from his journeys on the upper Missouri River. Bradbury was a houseguest at Monticello. Roscoe sent Jefferson a tract, an address on the values of botany as a popular pastime. In his essay Roscoe wrote botany was "peculiarly proper for youth, to whose unperverted minds the study of natural objects is always an interesting occupation, . . . an innocent and a healthful amusement. [Youth] will familiarize themselves to that regulated train of ideas, which is of use not only in every other department of natural knowledge, but in all the concerns of life."

American Bookmen

Of authors born in America who gave their books to Jefferson, Shecut is little known today. When Dr. William Baldwin visited Charleston in 1811 he was disappointed with the botany he found there. He remarked that Dr. Shecut and the French horticulturist Noisette, associated with rose culture, "have at least some zeal for botany." Dr. Shecut promptly sent Jefferson a copy of his *Flora Carolinaeensis: or a historical, medical, and economical display of the vegetable kingdom,* volume one, published in Charleston 1806. Jefferson was pleased with Shecut's book, which he commented to the author contained "much new matter," adding, "it promises to be among the most useful manuals in that science." But Dr. Stephen Elliott and some others more versed in botany disparaged Shecut's manual. There may have been some falling out between the two Charlestonians, since when Elliott later published his classic *Sketch* — a most modest title for an important flora of South Carolina and Georgia, and which has recently been reprinted — he did not mention Shecut although his roster of indebtednesses was long. Dr. Shecut, poor fellow, had been baptized John Linnaeus Edward Whitridge Shecut! Volume two was never published, and soft-spoken Dr. Darlington of West Chester, laid that to Shecut's "pecuniary embarrassments." Jefferson, however, was faithful to Shecut and some years later lamented the want of the second volume, "I have been in the constant hope of seeing the 2nd vol. of your excellent work." 20th century medical writers declare that Shecut was a "colorful and energetic practitioner."

There was Benjamin Waterhouse, "the fiery old vaccinator," of Newport, Rhode Island, who had lived with Dr. John Fothergill in England, and who returned to America at 28 to teach "theory and practice of physic" at Harvard, without salary, relying for fifteen years only on students' fees. He gathered his lectures on botany for the lay public into a slender volume called *The Botanist,* and presented a copy to Jefferson with the remark that "the Essex Junto had got such an entire possession of [Harvard], & had made it a fort, or stronghold, whence to annoy republicanism, that I saw I must quit them; and this expedited the publication of the *Botanist*." Jefferson replied that "the clergy, who are afraid of science every where," control it in New England. Dr. Waterhouse was unwilling to admit of the rising accent of clinical experience in medical education above the theoretical didactic approach, and so he was forced to resign the next year. Though testimony of his botanical interest is preserved today in a collection of 200 dried plant specimens with his medicinal notes, Waterhouse contributed no new concepts or information to botany.

His Sole Surviving Botany Book

If you visit the Rare Book Room of the Library of Congress today you may see the sole surviving botany book that Jefferson held in his hand, a modest *Catalogue* of North American plants published in Lancaster, Pennsylvania, by a Lutheran clergyman, Henry Muhlenberg, of that city. He was born ten years after Jefferson; he was educated in Halle, and at 21 returned to Pennsylvania. The Philadelphia area was a seedbed of natural history. There were the Bartrams on the Schuylkill, Barton teaching at the University, Darlington writing energetically in West Chester, and Muhlenberg preaching and botanizing in Lancaster. Humboldt, although anxious to return home from his travels in the Americas, sought out Reverend Muhlenberg in his own habitat to talk botany. This early period of the Republic was marked by two sources of bitterness: American discoveries were being announced in Europe and, with edge-bone competition, explorers, mostly from Europe, were scurrying to find the novelties. In America patrons were few, financial support uncertain, the government involved with other concerns. Oiled by jealousy this competition kept the movements of botanical explorers secret, and makes our efforts to trace their routes particularly difficult. The gentle Muhlenberg saw the paralysis that came with such competition and wrote with the spirit of science, "remember me to all valuable gentlemen who are unknown to me . . . try to open communion and correspondence with such. By joining hands, we may do something clever for the science."

Let Jefferson have even yet the valediction: "What a field have we at our doors to signalize ourselves in! The Botany of America is far from being exhausted."

A Note on Sources

This essay could not have been written without Emily Millicent Sowerby's *Catalogue of the Library of Thomas Jefferson,* 5 volumes, Library of Congress, Washington, D.C., 1952. Her arrangement for "Botany" (1:479-495) is chronological, 1549-1813. My opening quotation — from Jefferson's letter to Thomas Cooper, Oct. 7, 1814 — appears on p. 479. Miss Sowerby's account is essentially reproduced, with some additions, by Marion B. Savin and Harold J. Abrahams in the *Elisha Mitchell Sci. Soc. Jour.* 75:44-52. May, 1959.

A friendly librarian, Randolph G. Adams, converses on Jefferson's viscissitudes in book collecting in *Three Americanists,* Phila., 1939. For a sketch of Samuel Henley, D.D., 1740-1815, who may have preceded the physicians Benjamin Waterhouse or Adam Kuhn as a teacher of natural history in the Colonies, see Gerald Patrick Moriarty in the *Dictionary of National Biography.* John Custis of Williamsburg evidently did not confer often with his fellow townsman if we follow the correspondence of Custis with Peter Collinson in E.G. Swem's *Brothers of the Spade* (Worcester, 1949). Jefferson's view on the Linnaean classification is quoted from a "Plan for a botanick garden for a public school on the most useful and least expensive plan" published in the *Bulletin of the Pacific Tropical Botanic Garden,* 1(2):6-7. 1971.

See E.J. Willson's *James Lee and the Vineyard Nursery, Hammersmith,* London, 1961, for some hard-to-find commentary on Anglo-American relations in horticulture. Marjorie Fleming Warner provided background information and bibliography in a Richmond (1924) reprint of *A Treatise on Gardening* by John Randolph, Jr., incorporated in Gardiner and Hepburn's *American Gardener,* ed. 3, Washington City, 1826.

Prof. E.M. Betts assembled the single most useful reference on Jefferson's botanical interests in *Thomas Jefferson's Garden Book, 1766-1824,* published by the American Philosophical Society in 1944. Jefferson's *Notes* is available in modern editions; Betts summarized the botanical content (pp. 644-648).

The backgrounds of Virginia botany may be traced in *John Banister and his Natural History of Virginia, 1678-1692,* by Joseph and Nesta Ewan, Univ. Illinois Press, 1970. John Banister's grandson was a correspondent of Jefferson. *John Clayton, Pioneer of American Botany,* by Edmund and Dorothy Berkeley, Univ. North Carolina Press, 1963, details the period between Banister and Jefferson.

For a sketch of Benjamin Smith Barton, listing primary and secondary sources, see the *Dictionary of Scientific Biography,* 1:484-486. 1970; and for Bernard M'Mahon, *Jour. Soc. Bibliography of Natural History,* 3:363-380. 1960.

Benjamin Rush read his "Account of the sugar maple-tree of the United States" before the American Philosophical Society on August 9, 1791, and it was published in its *Transactions* in 1793.

For letters to and from Lafayette's cousin, Comtesse Noailles de Tessé, and those of André Thouin, see E.M. Betts, *Thomas Jefferson's Garden Book.* Other "French connections" will be noticed in Chapter III of Norman B. Wilkinson's *E.I. du Pont, Botaniste, the beginning of a tradition,* Charlottesville, 1972. A sketch of Palisot de Beauvois, with references, will be found in the often overlooked *Early Bryological Literature* by W.D. Margadant, published by the Hunt Botanical Library, Pittsburgh, 1968.

Douglas Botting relates the Humboldt episode as confided by Dolly Madison in his striking *Humboldt and the Cosmos,* Harper & Row, 1973. Charles A. Browne considers "Thomas Jefferson and the scientific trends of his time" in an excellent essay in *Chronica Botanica,* 8:1-64. 1944, wherein Humboldt's *De Distributione geographica plantarum* (1817) is noticed, and selections from Jefferson's correspondence are quoted. Humboldt's biographer, Helmut de Terra, quotes Humboldt's remark concerning his copy of *Playfair* in *Proc. Amer. Philos. Soc.,* 103:790. 1959.

William Roscoe's son, Henry, extolled his father in a biography published in 1833 in two volumes. The quotation from William Roscoe's tract entitled an *Address at the opening of the Botanic Garden of Liverpool, Previous to opening the Garden, May 3, 1802,* published in Liverpool that year, appears in volume 1, p. 258, of Henry Roscoe's life of his father. George Chandler fills in the Roscoe backgrounds in *William Roscoe of Liverpool,* London, 1953. John Bradbury and his associates are sensitively portrayed in Susan Delano McKelvey's *Botanical exploration of the Trans-Mississippi West,* Jamaica Plain, 1955. William Baldwin's correspondence, particularly with Stephen Elliott, was published by William Darlington as *Reliquiae Baldwinianae,* Philadelphia, 1843, and reprinted, with added notes and essential indices, by Hafner Press, N.Y., 1969. Baldwin met "the venerable Mr. Bradbury" in St. Louis in 1819, when Bradbury's visit had a "most exhilarating effect upon [his] health and spirits." Considerable disagreement obtains regarding what contribution J.L.E.W. Shecut made to American natural history and medicine. Thomas Cary Johnson, Jr., *Scientific interests in the Old South,* New York, 1936, Joseph Ioor Waring, *History of Medicine in South Carolina,* Columbia, S.C., 1964, and A.R. Childs, in the *Dictionary of American Biography,* favored Shecut in their accounts but Stephen Elliott and William Baldwin held a more critical view. Considering the role played by the "Jenner of America" it is surprising that no full length biography of Benjamin Waterhouse has been written. H.R. Viets wrote the account for the *Dictionary of American Biography* and more recently George E. Gifford has presented a vignette of Waterhouse in the *Harvard Medical Alumni Bulletin,* 44(2):14-16. 1969. Rev. Henry Muhlenberg's life and works were analyzed by E.D. Merrill and Shin-ying Hu in *Bartonia,* 25:1-66. 1949 and the wider considerations were drawn by Paul A.W. Wallace in the *Muhlenbergs of Pennsylvania,* Univ. of Pennsylvania Press, 1950.

Joseph Ewan

How Many Botany Books Did Jefferson Own?, published in the June, 1976 issue of The Missouri Botanical Garden ***Bulletin,*** was delivered as a lecture in February, 1976 in a series of Bicentennial programs, "The World of Thomas Jefferson," sponsored by The Missouri Botanical Garden and other cultural and educational institutions in St. Louis, Missouri.

Joseph A. Ewan, B. A., D. Sc., considered one of the nation's leading botanical historians, holds the Ida Richardson Chair of Botany in the Biology Department at Tulane University.

Dr. Jacob R. Schramm Dies; Assistant to Director of Garden, 1912-1915

Dr. Jacob Richard Schramm, a former Assistant to the Director of the Missouri Botanical Garden from 1912-1915, died recently at the age of 90, in Westminster Village North, Indiana. His death represents a tremendous loss to both the botanical and academic communities in which Dr. Schramm was considered a preeminent scholar.

Until his death, Dr. Schramm was actively involved in writing and research projects as Research Scholar in the Botany Department, Indiana University, where he continued receiving awards and recognition from fellow botanists.

Dr. Schramm attended Wabash College and completed his graduate studies at Washington University where he was appointed a Lackland Fellow by Dr. George T. Moore, In June, 1913, Dr. Schramm received his Ph.D. and continued at Washington University as an Instructor in Botany. From 1912-1915, he assisted Dr. George T. Moore who had been appointed Director of the Missouri Botanical Garden.

Following his work at the Garden and Washington University, Dr. Schramm assumed the Directorship of General Botany at Cornell University. While a professor at Cornell, he realized the need for an abstracting journal in the botanical field. All fields of botany were expanding so rapidly, that it was becoming a near-hopeless problem to find, much less keep up with, the ever increasing numbers of scholarly publications. It was hardly surprising that Dr. Schramm co-founded a publication called *Botanical Abstracts* which he edited from 1921-1926.

Important and large as the *Botanical Abstracts* project was, Dr. Schramm worked to broaden this new journal to include the abstracting of published articles from the whole field of biology (exclusive of medicine). As a result of his efforts, *Botanical Abstracts* became *Biological Abstracts.*

Today, *Biological Abstracts* is as indispensable as it is voluminous. It undertakes to abstract the world literature in biology. Its success is measured somewhat by its coverage of more than 8,000 periodicals from some 107 countries, territories, and commonwealths.

Retirement came to Dr. Schramm at age 70 years, in 1955. As recently as 1966, he published a 194-page research study on the Ecology of Black Mining Wastes from Antracite Mining, for which he was given the Merit Award of the Botanical Society of America.

Dr. Schramm was a prolific contributor to the field of Botany and will indeed be missed by all in the botanical community who have benefited immeasurably from his lifelong efforts.

Jack Humbles
Curatorial Supervisor
Department of Botany

New Flora of Panama Grant Awarded by National Science Foundation

The National Science Foundation recently awarded the Garden a $50,900 grant for continuation of the Flora of Panama Project. This project, under the direction of Dr. Thomas B. Croat, will be completed by the fall of 1977, thus ending work begun more than 30 years ago. When complete, the *Flora of Panama* will contain descriptions of more than 12,000 species of plants from Panama with keys for their identification. The project has supported research by many botanists on plant families which occur in Panama. The Garden, partly with funds from the National Science Foundation and jointly with the Smithsonian Tropical Research Institute in Panama, maintains a small herbarium and collecting facility in Panama.

The project has also supported numerous field expeditions to Panama. Many of the plant specimens which have been used in the Garden's plant exchange with more than 100 botanical institutions throughout the world have been collected on these expeditions. In the past five years alone more than 21,000 collections have been made in Panama.

Though the project nears an end, the field work supported through it remains as important as ever. Many new roads are being pushed into as yet unbotanized parts of Panama, and these newly opened areas are bound to be rapidly depleted because of population pressures in Panama. Most of the undisturbed, natural areas which were first botanized and found to be rich in new species only five years ago are now completely denuded. Collections must be made while these natural populations of plants still exist in order to record the plants which now exist there. The new natural areas which still remain are proving to be even richer in species than previous areas since they consist mostly of wetter, more inaccessible, and until now, unstudied forests.

Dr. William G. D'Arcy, research associate on the project, recently returned from a collecting trip to Panama, Costa Rica and Nicaragua. While in Panama, he botanized the summit of Colcan El Baru, the highest mountain in Panama. This important effort places D'Arcy among the few botanists who have collected on and near the summit of Baru.

Dr. Croat left in February to spend nine months in the tropics. In addition to making general collections for the Flora of Panama project he will be concentrating on his research of the aroid (Philodendron) family, and he will be introducing many living specimens of interesting species of Araceae into the Garden's collection of living plants.

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MISSOURI BOTANICAL GARDEN BULLETIN
2345 Tower Grove Avenue
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Missouri Botanical Garden Bulletin

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Gloria Vanderbilt to be Guest of Honor at Chrysanthemum Ball

Gloria Vanderbilt, well known artist in fabrics and design whose new career in ladies' ready-to-wear will be launched September 11 at Saks Fifth Avenue in St. Louis, will be in attendance at the Chrysanthemum Ball on Friday, September 10. Her appearance and the informal modeling of 50 fashions by Saks are among the exciting features highlighting the Ball, which will begin at 6:30 p.m. on the Garden grounds.

A sellout crowd is expected for this stellar social event. Members of the Garden will receive invitations this month. Price of regular tickets is $50 per person, $100 per couple. Patrons are $75 per person, $150 the couple.

Proceeds will benefit the Edgar Anderson Memorial Boxwood Garden, now under construction in an area between the Anne L. Lehmann Rose Garden and the Japanese Garden. An article in this issue of the *Bulletin* discusses the rich tradition of the Boxwood Garden, and a feature in the September *Bulletin* will detail its design and cultivation.

The evening's festivities will take place amid a panorama of fall colors. Under a yellow, rectangular tent 60' x 210', guests will enjoy a seated dinner catered by The Bulter's Pantry. Table appointments will include centerpieces of yellow and bronze chrysanthemums in terra cotta pots and saucers, in keeping with the natural environment, designed by Robert Dingwall, Jim Rhodes and other members of the Horticulture Department. These arrangements will be sold in The Plant Shop the day after the Ball.

Over 126 hanging baskets made up of grape ivy and other greenery will adorn the dining and dancing area under the canopy. Outdoor displays will include some 1200 hardy chrysanthemums, now being grown under black cloth by horticulture volunteer, John Brown. These plants normally would not flower until October, but are being "forced" in order to be in bloom for the Ball. Near Tower Grove House where informal modeling of the fashions from Saks will take place, cascading chrysanthemums will embellish the Kircher Memorial Urn.

Music for the evening will be provided by the Russ David Orchestra with Arte Schieler.

The latest list of Corporate Sponsors announced by Mrs. Walter G. Stern, Chairman of the Ball, consists of these 20 donors of $1000: Emerson Electric, General Dynamics, McDonnell-Douglas Corporation; A Friend; Tiffany Industries — Mr. and Mrs. Farrell Kahn; Tobey Fine Papers; Universal Printing; Tower Grove Bank; Mercantile Trust Company; First National Bank in St. Louis; Mallinkrodt Industries; Missouri Pacific Railways; Monsanto Co., Harry Kessler and Associates; Stix, Baer and Fuller; Hellmuth, Obata and Kassabaum; Mark Twain Bancshares; Gateway Seed; The Nurserymen of the Greater St. Louis Area; and Boatmen's Bank.

Donations of $500 have been received from Laclede Gas Company, Interco, and Guarantee Electric

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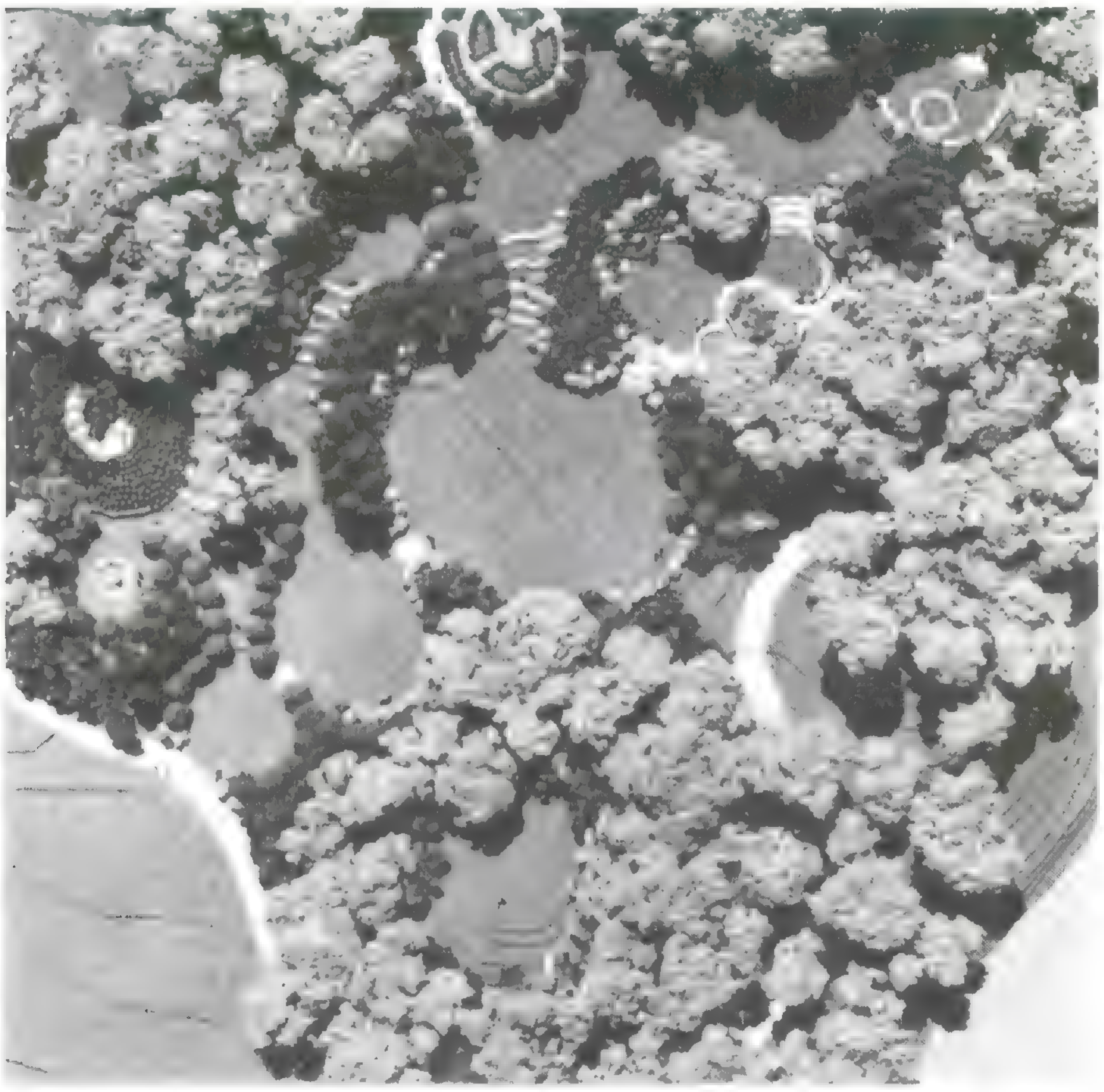
HISTORIC BOXWOOD FINDS ITS PLACE AT THE GARDEN



Scale Model of Edgar Anderson Boxwood Garden.

Boxwood is one of man's oldest and most cherished garden ornamentals. It was one of the late Edgar Anderson's enthusiasms. The Edgar Anderson Memorial Boxwood Garden, which is now under construction and which has been designated beneficiary of the 1976 Chrysanthemum Ball, will recognize his specific contribution to this aristocrat of plants. It will further honor Dr. Anderson for his "profound influence both on the scientific fields of interest to him and on the people of St. Louis who came to appreciate the Missouri Botanical Garden and its great treasures more through his lifelong efforts," notes Dr. Peter H. Raven, Director.

Highlights of Dr. Anderson's 46 years with the Missouri Botanical Garden include service as Director and Curator of Useful Plants, and Englemann Professor of Botany at Washington University. He wore his honors lightly; the title he valued most highly was that of "botanist". His discovery of "introgressive retrogression", the gradual infiltration of the germplasm of one species into that of another, led to his election to the National Academy of Science.

In 1934, under the auspices of the Arnold Arboretum of Harvard University, he journeyed to the Balkans in search of "hardier strains of ivy, yew and boxwood." The Anderson Balkan boxwood, propagated at the Arnold Arboretum and the Missouri Botanical Garden, are among the hardiest on record. In 1937 he was awarded the Order of the Jugoslavian Crown for internaponal botanical cooperation.

Dr. Anderson was a founding member of the American Boxwood Society, the Herb Society of America and the St. Louis Herb Society. The Boxwood Study Group of the St. Louis Herb Society was begun under his aegis. Shortly after his sudden death in April of 1969 the first members of the study group suggested to the Missouri Botanical Garden that a boxwood garden would be a fitting memorial to Edgar Anderson. It would perpetuate his unique contribution to the search for hardy boxwoods and provide a focus for its continuance. The group proposed as its contibution to initiate a test program at the Garden and to grow the bulk of the plants needed for the memorial garden. The proposal was accepted ancontinuance. The group proposed as its contribution to initiate a test program at the Garden and to grow the bulk of the plants needed for the memorial garden. The proposal was accepted and the work carried out. Upon its completion in 1975 the study group was dissolved. It was succeeded in 1976 by the Boxwood Society of the Midwest whose membership is open to any boxwood enthusiast who wants to learn more about the plant and to participate in the ongoing boxwood program at the Missouri Botanical Garden.

The Anderson Boxwood Garden, which covers some 3.5 acres adjacent to the Japanese Garden, "will form an orderly and interesting transition from the Lehmann Rose Garden to the Japanese Garden," in Dr. Raven's words. Chief designer of the Edgar Anderson Boxwood Garden is Karl D. Pettit III of Eugene Mackey and Associates; landscape consultant is Harriet Rodes Bakewell.

Boxwood is a ancient plant. The Assyrian conqueror Tiglath-Pileser the First had these words inscribed about 1100 B.C.: "Cedar and box have I carried from the lands I have conquered. Trees that none of my forefathers possessed. . . In the parks of Assyria have I planted them." He was only one of many conquerors to count boxwood among their spoils.

BUXUS, generic name of the plant, testified further to its antiquity, and to one of its historic uses. The ancient Greeks and Romans cut the larger, tree type boxwoods for fine lumber. Their skilled artisans employed the elegantly off-white, hard and fine-grained wood to fashion exquisite small boxes in which they stored such precious goods as jewels and cosmetics. The Greek word for the box tree and the containers made from its wood was *puxos;* the Latin work was *buxus*. When Carolus Linnaeus, the great Swedish botanist, described and named the plant in 1753, he chose *BOXUS* for the generic and *sempervirens* for the specific name of this dominant European species.

Boxwood was employed in the paradise gardens of the Persians. It was a favored plant for the garden art of topiary which the Syrians invented and taught to the Romans. Tall boxwood hedges screened from prying eyes the harem gardens of Mvsh Spain; and insured the privacy necessary to contemplation to the monks in the cloistered gardens of the Middle Ages. Boxwood

EDGAR ANDERSON
November 9, 1897 - June 18, 1969
Photo Contributed by Claude Johnson

played a starring role in the formal and elaborate pleasure gardens of the Renaissance. Cardinal Wolsey edged with boxwood the knot garden he had installed at Hampton Court for th enjoyment of Henry VIII. André Le Nôtre, when he designed the magnifient gardens at Versailles in the seventeenth century, chose boxwood to frame the vistas and to shield the areas of surprise and privacy he deemed essential to a garden.

During those centuries, when boxwood enhanced gardens large and small, its artistic and commercial uses continued. Chessmen and religious medallions and dagger haftes were carved of box; mathematical and musical instruments which required precision were made of box. Fine furniture was inlaid with box. When printing was invented by Gutenberg in the mid-fifteenth century, boxwood was the preferred medium for the woodcuts which illustrated the herbals which were the best-sellers of the day. These same qualities of hardness and fine texture which made boxwood so valuable for works of artistry and craftsmanship brought the plant almost to extinction. In the mid-eighteenth century when the Industrial Revolution came to England whole groves of box trees were cut to supply the insatiable demand for boxwood for shuttles for the looms of the great English textile industry.

Boxwood was brought to america by the early Colonists, from England, France and Holland. It graced the small frontyard gardens fo New England merchants and the great formal gardens of Southern planters. It traveled westward with the pioneers. Its first authenticated use in an American garden was in 1642 at the manor home of Nathaniel Sylvester on Long Island. Boxwood was a treasured possession to be moved when the family moved; or when that was not feasible, to be taken as "slips" from a cherished plant.

In the Anderson Garden the historic roles of boxwood will be suggested rather than recreated. It will be a garden for today, and tomorrow.

Mary A. Gamble, President
Boxwood Society of the Midwest

TOWER GROVE HOUSE COMMEMORATES HENRY SHAW'S BIRTHDAY

Tower Grove House celebrates Mr. Henry Shaw's birthday on July 24, 1976. This year the plan of the party will be as follows: The hostesses will wear long, flowered summer skirts or dresses and hats, made by the International Hat Company of many different kinds of plants.

An Orange Ring Cake which was a favorite of people in St. Louis during Henry Shaw's lifetime will be served with a fruit punch.

The herb garden at the back of Tower Grove House is a perfect setting for Mr. Shaw's Birthday Party.

Alice Lynch, Manager
Tower Grove House

NSF Grants to Garden Announced

The Garden has recently received a grant for $162,100 from the National Science Foundation for continued support of the curatorial activities in the Botany Department. Effective date of the grant is May 1, 1976, and this represents the beginning of the fifth year of this grant, which began in May 1972.

The grant supports plant mounters and several technical people in the herbarium, together with a small amount of support for some of the curators. The purpose of this grant is to upgrade the condition of the collections and to make them available to other researchers around the country and around the world. This, of course, is done through remounting old material, updating the names and identifications on current material, and handling a tremendous number of specimens on loan each year.

The Garden also has received a grant of $13,663 from the National Science Foundation for supplemental support of the project entitled "Floristics of Amazonian Peru," under the direction of Dr. Alwyn H. Gentry, Assistant Curator of the Garden's herbarium.

MEMBERS' FLOAT TRIP AT ARBORETUM ON AUGUST 21

A one day float trip on the Meramec River, through the Arboretum and surrounding area will be the final Members' event of the spring/summer series. This family event, on Saturday, August 21, will be led by Arboretum staff members. The Meramec, near the Arboretum, offers a quiet day on the water, giving a new perception to the Arboretum as an important natural feature of the St. Louis area.

Group size must be limited and advance registration is required. A nominal fee will be charged to cover cost of canoe rental. For more information and registration, please contact the Arboretum at 772-7600, Sta. 81.

June Hutson, Chairman
Arboretum Members Events

GARDENING IN JULY

A good watering program is essential for this month due to the very dry conditions that we have had over the past several months. It is important in watering to water heavily at least once very 10 to 12 days and this should be equivalent to at least 2 inches of rainfall. Rambler and climbing roses can be cut back immediately if this has not ben done earlier.

Cut out old wood and watch out for weeds and do not let them go to seed in the garden area. These can be pulled before they set seed and can be put into the compost pile. Keep suckers removed from the base of Dahlias and keep feeding with a commercial fertilizer and see that they are given ample watering. Also, keep suckers off of Lilacs, Viburnum, flowering peaches and plum. Be sure that Dogwood trees get plenty of water.

Shade trees can be pruned now. They would benefit by a good mulch of about 3 to 4 inches placed about the base of the tree to conserve moisture and cut down on soil temperature.

Keep water off the top of roses and other plants subject to fungus disease. It is best to soak them in, around 10:00 a.m. as needed.

Continue to spray for control of mildew and black spot. A feeding of a liquid fertilizer can be beneficial to the roses at this time to encourage better flowering.

Oriental poppies can be divided and transplanted now that they have finished flowering. These will set new roots and make ideal flowering material next spring.

Seeds of biennials can now be planted in the coldframe for setting out in early September. Sweet Williams, Foxglove, and others are good examples of what can be set out. Garden Phlox may need a spraying of Benlate or other good fungicide to control mildew. Red Spider, which is a problem during hot weather, should be sprayed at regular intervals using Kelthane. Follow the directions on the label and repeat in 4 days until under complete control.

Brown patches of grass in your lawn during the summer months is usually a good indication of Chinch bug or sod webworm. If this is the case, spray with a good solution of Diazinon or Pyrethrum. Water this in well after applying it.

Aphids and other insects have been more common than usual due to the very dry weather. A good spraying program is essential to keep these under control.

Madonna Lilies should be divided every 3 to 4 years. This can be done at the end of this month or in early August. Dig the bulbs and dust them with a good fungicide and plant down to 6 to 8 inches in a bed of 2 to 3 inches of sand for good drainage. Do not prune spring flowering shrubs after early July as buds are forming now with a balance of growth for next spring.

New rose varieties and the 1977 All-American Rose Selection winners are now on display at the Garden. A visit now can be a very rewarding and exciting one especially to the Rose Garden.

Robert Dingwall
Chief Horticulturist

ARBORETUM NAME CHANGED TO 'SHAW ARBORETUM'

Designation of the Garden's Arboretum and Nature Reserve at Gray Summit, Mo., as "Shaw Arboretum" was approved by the Board of Trustees at its April 21, 1976, meeting. The official change was made on recommendation of the Board's Arboretum Committee whose chairman is Mr. C. C. Johnson Spink.

Henry Shaw considered that an important and desirable component of his Botanical Garden would be an arboretum, that is a tract devoted to the growth, display, and study of trees and woody shrubs. As one can see from Shaw's early planning sketches of his developing Garden, a major portion of his original property was designated as arboretum. It was this western portion of the original Garden, Henry Shaw's proposed "Arboretum," that was sold by the Trustees in 1925 to secure funding for the purchase of property at the Gray Summit area. Although a major impetus for this transaction was air pollution damage to the Garden's orchid and conifer collections, Dr. George Moore pointed out in the 35th Annual Director's Report, "The primary object of securing land at a considerable distance from the city would be for the purpose above indicated [saving the orchids] but steps would be taken at once to develop a real arboretum, and there should also be secured a considerable area of natural forests with its undergrowth, which could be preserved for all time as a reservation." Thus, Henry Shaw's intentions for an arboretum were not only carried through, but by this transaction were greatly expanded to cover over 2000 acres and include large areas for introducted species such as found in the magnificent Pinetum area, as well as extensive examples of native forests.

It was with these historical developments in mind that the Trustees officially designated the Arboretum as the Shaw Arboretum. As the Missouri Botanical Garden continues to expand and improve its displays and collections, its Shaw Arboretum will unquestionably be recognized as a major asset of one of the world's finest botanical institutions.

THE NEWLY EXPANDED HERB GARDEN

With very little fanfare, a small group of volunteers have been in the process of expanding and planting the Herb Display Garden south of Henry Shaw House. Members of the St. Louis Herb Society are the volunteers responsible for this labor of love.

Several years ago, it was suggested to the Society that they expand herbs into the entire fenced area, doubling the size of their existing garden. The existing herb garden, which the Society has maintained for 12 years, was primarily a culinary one. The proposal was very appealing, since further development of the garden would enable the Society to include historic medicinal plants as well as dye and ornamental herbs not previously displayed.

Extensive realigning of bricks was done this past fall and spring, and although the original structure of the garden, as designed by Edith Mason, was faithfully adhered to, one large area which originally contained an Acer lost in a wind storm, was eliminated, and in its place were made two square beds containing Cornelian cherries (Cornus mas) — a tree found in Medieval Herb Gardens.

In the expanded half of the garden, there now is a strong planting of seasonally and subtly colored perennials and Victorian favorites, all herbs.

An herb garden lends itself to the intimacy of an enclosure and the handsome wrought iron fence surrounding this patterned brick space is indigenous to St. Louis architecture of the period of Shaw House. The sense of enclosure also gives the viewer a different experience at Missouri Botanical Garden, one to which he can easily relate, feeling perhaps any portion of the little garden could be duplicated in his own back yard.

The most formal aspect of the herb garden is the double Knot Garden planted with ornamental sages, Teucrium and Santolinas inside the South gate. This gate will now be kept closed, giving the garden a strong East/West axis, centered on the East by a small sundial figure surrounded by Thymes and on the West by an oval bed of seasonal color. This bed will contain the only strong statement of color in the garden. Viola tricolor in Spring, will be followed by Tagetes in summer and Chrysanthemum in the Fall. These plants, surprisingly, are all herbs or at least their ancestors were!

Two of the beds surrounding this center bed contain the important herb, Rosemary, edged with dwarf pomegranate (Punica granatum nana) and two others are planted with a tender Lavender not commonly seen, Lavandula dentata.

Much importance has been given to the Scented Pelargoniums, great favorites in Victorian times when they were often grown inside on windowsills. Over eighteen varieties are represented in mass plantings, including some climbing specimens.

Spice Pinks (Dianthus caryophyllus), Mignonette (Reseda odorata) and Valerian, all noted for their fragrance are also included.

A dye bed bursts into bloom in early spring with golden woad (Isatis tinctoria), Meadow-rue (Thalictrum) and Blue Wild Indigo (Baptisia australis). This will be followed by Golden Marguerites (Anthemis tinctoria), Italian Bugloss (Anchusa azurea), Mountain Bluet (Centaurea montana) and Pot-marigold (Calendula officinalis).

The historic medicinal plantings will have a succession of bloom with foxglove, (Digitalis purpurea & D. mertonensis), Feverfew (Chrysanthemum parthenium), German Camomile (Matricaria), Verbena officinalis, Veronicas, Salvias, Eryngium anethystinum, Betony (Stachys officinalis) Butterfly Milkweed (Asclepias tuberosa), Solidago and Monardas. The medicinal and dye beds are edged with bronze Ajuga reptans and Armeria laucheana, with its tiny ball-like pink blossoms.

Height and solidity have been given the garden with the introduction of four Foster Hollies, a large Ilex opaca, "Merrie Christmas," and a number of handsome Buxus.

Any garden needs maturity, and because most of these plants are perennial, it will take time for them to look established. The garden is lovely now; by midsummer it should be coming into full beauty and some maturity.

The St. Louis Herb Society is celebrating its maturity (35 years) by this gift of a garden to the Garden.

Joyce Driemeyer
Immediate Past President
St. Louis Herb Society

***The Edwin R. Waldemer Memorial Fountain, donated to the Garden by Mr. and Mrs. Edwin R. Waldemer in memory of their parents. Harriet Rodes Bakewell and Karl D. Pettit III were the coordinating architects, and Robert Walker was the sculptor. A descriptive interpretation of this magnificent new feature which forms an "anteroom" to the Anne L. Lehmann Rose Garden will appear in a subsequent* Bulletin.**

Volunteers — The Lifeblood of the Garden

Volunteers at the Missouri Botanical Garden have become an essential part of its existence. There are currently 400 active volunteers, who gave a total of 35,000 hours in 1975. Each volunteer gives an average of one-half day a week, with some devoting as much as five days a week. No experience is required of the individuals who volunteer, and the new knowledge acquired is a part of the excitement of being a volunteer.

People volunteer for a variety of reasons. They are usually public spirited individuals, men and women who find reward in using their spare time to benefit others. Included in this group are retirees, students, housewives, and those with jobs outside the home.

Along with the satisfaction of contribution, there are tangible rewards at the Garden. Volunteers receive discounts at the Garden Gate Shop on both books and gift items, and at the Plant Shop and Snack Bar. They attend all staff functions, such as the annual Christmas Party, and other gatherings during the year. Volunteers are encouraged to attend all lectures and Garden activities. After a volunteer has worked a total of 50 hours in one year, he is entitled to request, without fee, a Volunteer Membership.

The wide diversity of volunteer jobs encourages those with varied interests. A weekly contingent of sixty volunteers guide visitors through Tower Grove House, Henry Shaw's historical Victorian residence. The Gift Shop, one of the most successful in the city, has a paid supervisor, but is otherwise run completely by volunteers. Four volunteer buyers make several yearly trips to select articles to be sold in the shop, and 20 volunteers assist customers with their purchases.

The Plant Shop is also working toward a volunteer-operated organization. Under the leadership of Jamie Weldon, the 25 volunteers are becoming knowledgeable and a well organized group.

Volunteers are used in educational programs at Shaw Arboretum, Gray Summit, leading tours through 10 miles of trail systems, as well as maintaining trails and surrounding areas.

Maurita Stueck, Chairman of the Guides, leads a group of 50 well-versed individuals who give tours to school groups and other interested organizations. A three month training course is given for prospective guides. The next course is scheduled for January, 1977.

The Horticulture Department is the largest and most diverse area of the Garden. This includes the Climatron, Desert House, Mediterranean House, greenhouses, experimental greenhouse, Plant Records, Answermen, rose gardens, English Woodland Garden, Japanese Garden and the entire grounds. Volunteers help maintain all these areas!

The John S. Lehmann Building houses three separate departments. The Herbarium, which houses a collection of 2,500,000 dried plant specimens, uses volunteers to prepare specimens for storage. The Education Department uses volunteers in teaching school children, while the library has volunteers working in virtually every area of operation.

The Garden could not keep up with its huge quantity of paper work, were it not for the many volunteers who assist with clerical work. Volunteers who cannot work on a regular basis help with special events and are called when needed.

If you are interested in becoming a volunteer, please call me Tuesdays or Thursdays, 9 a.m. - 1 p.m., 772-7600, ext. 53.

Carol Taxman
Chairman of volunteers

Mrs. Joyce Johnson, left, and Mrs. Betty Demzik of The Henry Shaw Cactus Society, which will hold its annual show August 28 through September 6 in the Floral Display House.

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M. P. CRONIN, Editor

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Shaw's Living Legacy: Victorian Grandeur & Modern Fun Mix

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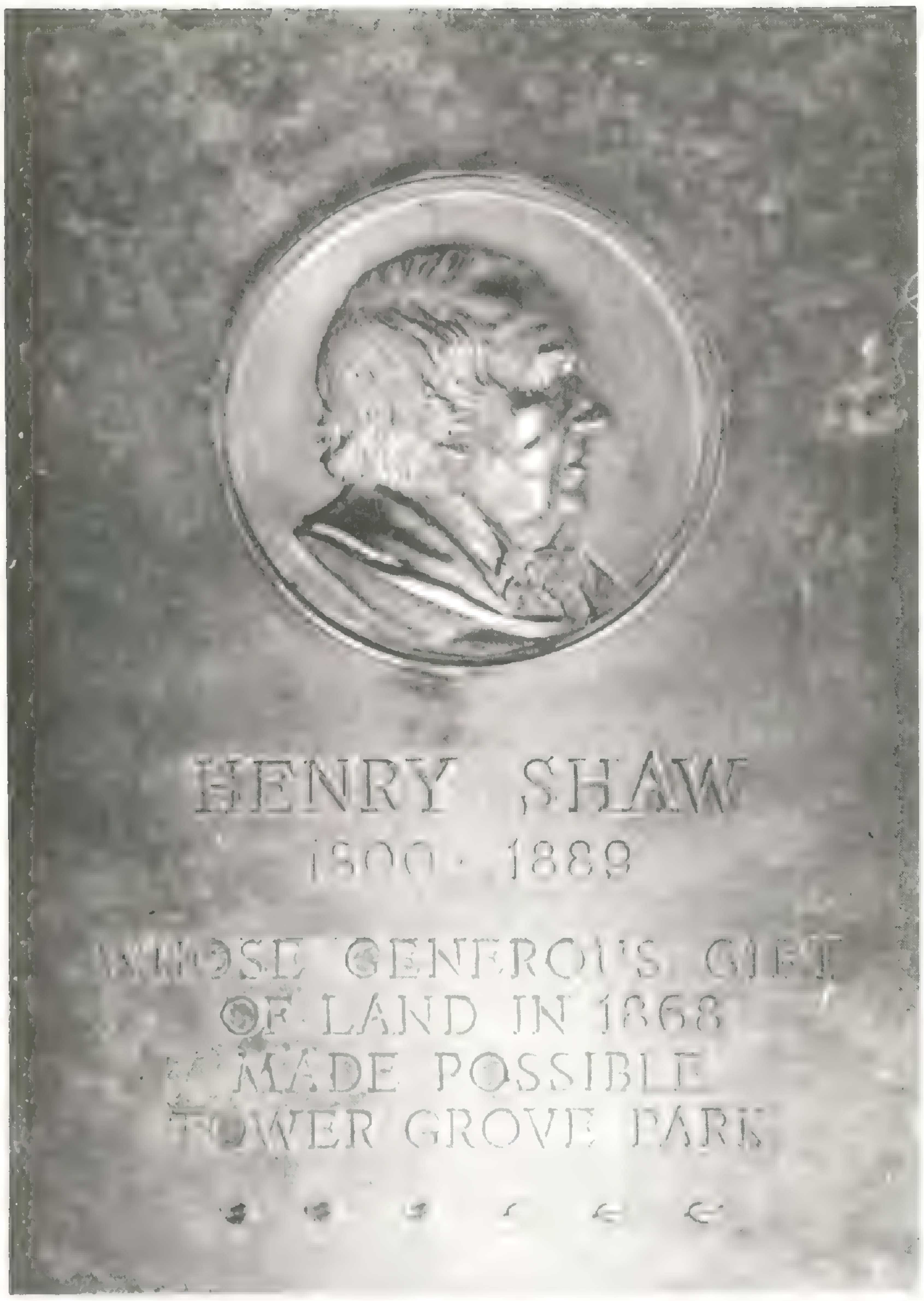


It wasn't always a park. Once upon a time, over a century ago, it was only a dream. Perhaps "plan" would be a better word than "dream," because Henry Shaw, the man who planned and created Tower Grove Park, was hardly a dreamer in the usual sense. He was an astute and successful 19th century St. Louis businessman. At age 39, believing he had accumulated enough of this world's goods, he retired to devote the rest of his life to the development of his two favorite projects, Missouri Botanical Garden (popularly known as Shaw's Garden) and Tower Grove Park. The park was named for "Tower Grove," his country residence in the Garden.

A Victorian Park

Tower Grove Park has been called one of the finest remaining examples of a Victorian park in the United States — quite likely in the world. It has been given national recognition by being listed in the National Register of Historic Places. Its gazebos, statuary, fountain and lily ponds, stately entrances with unique gatehouses, and tree-lined drives and walks convey Henry Shaw's vision of a strolling park. In the tradition of his native England, it was to be a place of tranquility and ordered beauty. It was also the city's first public driving park, designed with broad carriage roads. Through the years, it has taken on additional dimensions and become a landmark of tradition, a witness to an age of gracious living, and yet a very contemporary part of each succeeding generation. With its tennis courts, ball diamonds, children's playgrounds, and picnic areas, it is a very active people's park as well as a place to enjoy a bit of natural beauty in a busy urban community.

Tower Grove Park is bounded by Grand Avenue on the east, Kingshighway on the west, Magnolia Avenue on the north and Arsenal Street on the south. The general plan for the one and one-quarter mile long tract with its narrow three-tenths mile breadth was the "gardenesque style" involving a main drive leading from the entrance gates at Grand Avenue with turnouts at various points and terminating at the Shakespeare Circle at the center of the park where the Center Cross Drive intersects the park. From this point widely separated curving north and south drives then proceeded to Kingshighway, the center area being planted heavily with trees through the years so that what was meadowland when the park opened is now the pleasantly forested picnic area west of the tennis courts.

A Gift to the City

The land was originally part of the Prairie des Noyers common field, laid out by the early French pioneers as common farm land and acquired by Mr. Shaw at a foreclosure sale. Having been used as farm land, the tract was almost treeless when Henry Shaw conceived the idea of developing it as a city park. It was not difficult to persuade the Mayor of the City of St. Louis, James S. Thomas, of the significance of such a park for the city. It was agreed that Shaw would give the land to the city in return for which the city would float a bond issue sufficient to develop a park along the line of Shaw's thinking and would make an annual appropriation adequate for maintenance of the park.

At the time, the western boundary of St. Louis extended only 660 feet beyond Grand Avenue and most of the land proposed for the park lay in St. Louis County. Under the existing charter, the city had no authority to accept and develop this tract, so it became necessary to apply to the Missouri legislature for this purpose. On March 9, 1867, an act creating Tower Grove Park was approved. This act established Tower Grove Park to the extent Mr. Shaw might see fit to grant land to the City of St. Louis for the purpose of a public park. The exclusive control and management of the park was to be vested in a board to consist of not less than five nor more than seven persons to be styled "Commissioners of Tower Grove Park." The legislation provided that Henry Shaw, throughout his life, would be a member of the board with the others to be appointed for terms of five years by the Supreme Court of Missouri. It was also specified that upon Mr. Shaw's death he would be succeeded on the board by the Director of the Missouri Botanical Garden.

On October 20, 1868, Mr. Shaw conveyed the land which was to become Tower Grove Park to the City of St. Louis. To finance the development of the park the city gave to the commissioners $360,000 derived from a special bond issue. There is a popular misconception that Tower Grove Park was endowed by Henry Shaw. However, all of the funds used in the original development and subsequent capital improvements of the park have been derived from the city and from gifts and bequests of public spirited citizens. While Mr. Shaw contributed virtually all the land and gave unstintingly of his energy and imagination to the park's development, there is no record of his having used his personal funds except for the three noteworthy bronze statues and the other works of art in the park. Mr. Shaw did not create an endowment for the support and future development of the park.

When Shaw conveyed his land to the city for the park, he reserved a 200-foot strip around the perimeter to be rented by the park commissioners "for the purpose of erecting villa residences thereon only." His idea was that St. Louisans, wanting to live near such a lovely area, would rent the ground under long-term leases and build impressive residences. The gross rentals received from the houses were to be paid over to Mr. Shaw and his heirs and assigns, undoubtedly with the intention it would help support the Garden. The brick house just east of the North Gate (Magnolia Avenue traffic entrance) was erected by Shaw evidently to serve as a model "villa." But the English system of ground rents, by which a tenant improved the property, did not catch on in St. Louis, a city noted for its home ownership. The model was the only villa built. It still stands as do the columns which were erected 200 feet inside each pedestrian and carriage entrance to mark the boundaries of the land designated for residences.

The deed conveying the land to the city contained a reverter clause stating that, in the event the city did not comply with its provisions, the land would revert to the Missouri Botanical Garden. Since the commissioners failed to make the leases contemplated for the 200-foot strip, the trustees of the Garden brought legal action. The litigation was settled finally in 1925. The trustees of the Garden were authorized to release all their interest in the 200-foot strip to the City of St. Louis for $500,000, payable in ten equal installments of $50,000 each. The court decree further provided the 200-foot strip "be forever used and devoted by the City of St. Louis and its successors as and for public park, play and recreation grounds." Thus, the 200-foot strip came under the full jurisdiction of the commissioners as a public park on the same terms as the original land grant by Mr. Shaw for this purpose.

The Payne Tract

There still remained a privately owned strip of land adjoining the park at the northwest corner, known as the Payne Tract. This contained about eight acres, which Shaw had stipulated must be acquired for the park. Before the end of 1926, all of the Payne Tract had been secured either by purchase or condemnation. Thus, the entire acreage (285) of what is now Tower Grove Park was acquired.

From the time Mr. Shaw gave the park acreage to the city until his death, August 25, 1889, he was not only president of the Board of Commissioners but was the chief designer and supervisor in the planning, development and maintenance of the park.

20,000 Trees

More than 20,000 trees were planted on the almost treeless farm land, transforming it into a park that is still remarkable in its variety of foliage. These trees were gathered from many places around the world, started as nursery stock in Shaw's Garden, and later transplanted. Mr. Shaw once commented on the tree planting in the park: "The finest and best trees adapted to the soil and climate of Missouri have been planted. Next to our native trees, northern Europe has furnished us with the greatest number of hardy, healthy species; also, a few from Siberia, China and Japan." Among the kinds of trees were sugar maple, Norway and scarlet maple, sycamore, papaw, horse chestnut, white birch, shell bark hickory, wild cherry, redbud, gingko, dogwood, catalpa, persimmon, honey locust, butternut, black walnut, American and European larch, tulip, Osage orange, magnolias in variety, box elder, buckeye, peach, American crabapple, native and European linden, elm, sweet gum, and many species of oak. There were evergreens of many kinds — juniper, spruce, cedar, fir and pine. An early collection of trees

was presented by John F. Darby, a well-known St. Louisan and former mayor, and these were planted in the eastern part of the park. Additional white dogwoods, gift of a generous friend of the park, were recently planted near the new concession.

James Gurney, First Superintendent

In the summer of 1866, Henry Shaw secured the services of James Gurney from England as chief gardener. Mr. Gurney worked closely with Mr. Shaw, devoting his time and effort to the Missouri Botanical Garden and Tower Grove Park. Upon Shaw's death, Mr. Gurney was appointed as the first superintendent of Tower Grove Park, beginning a tradition of three generations of Gurney family service as park superintendents. James Gurney, until his death in 1920, made Tower Grove Park as much a monument to his labor and landscaping skill as did Henry Shaw with his generosity and foresight. It was said that every new tree of the original group, but three, was planted personally by Gurney or under his personal direction. (The three exceptions were planted by noted visitors on ceremonial occasions.)

James Gurney learned gardening from his father, working as a youth in the famous Royal Botanic Gardens of Kew, England, where he was in charge of the aquatic plant section. Continuing his specialty in water lilies, he introduced their display in Tower Grove Park and Missouri Botanical Garden. Mr. Gurney's idea of a city park was that it should be walled in by trees, giving the impression of a great forest. He wisely recognized that it must have its practical as well as ornamental side, and established public playgrounds and recreation fields.

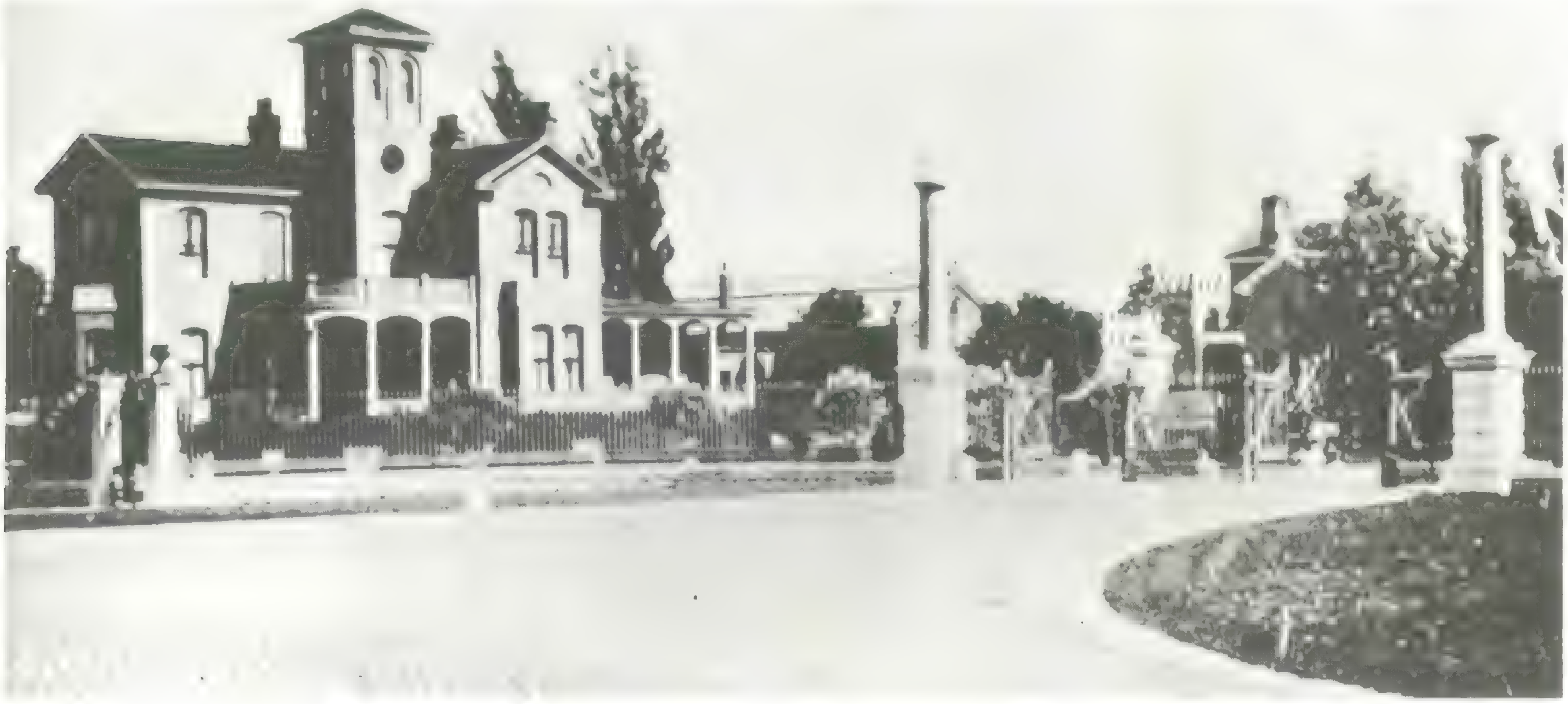
After James Gurney's death in 1920, he was succeeded as park superintendent by his son, James Gurney, Jr., and he, in turn, was succeeded on his death in 1943 by his daughter, Bernice E. Gurney. Miss Gurney served until her retirement in 1976 and is now a consultant to the Board of Commissioners. Thus, three generations of Gurneys have nurtured the park for over a century. All who enjoy Tower Grove Park owe much to their dedicated, faithful, devoted efforts.

Ornamental Entrances

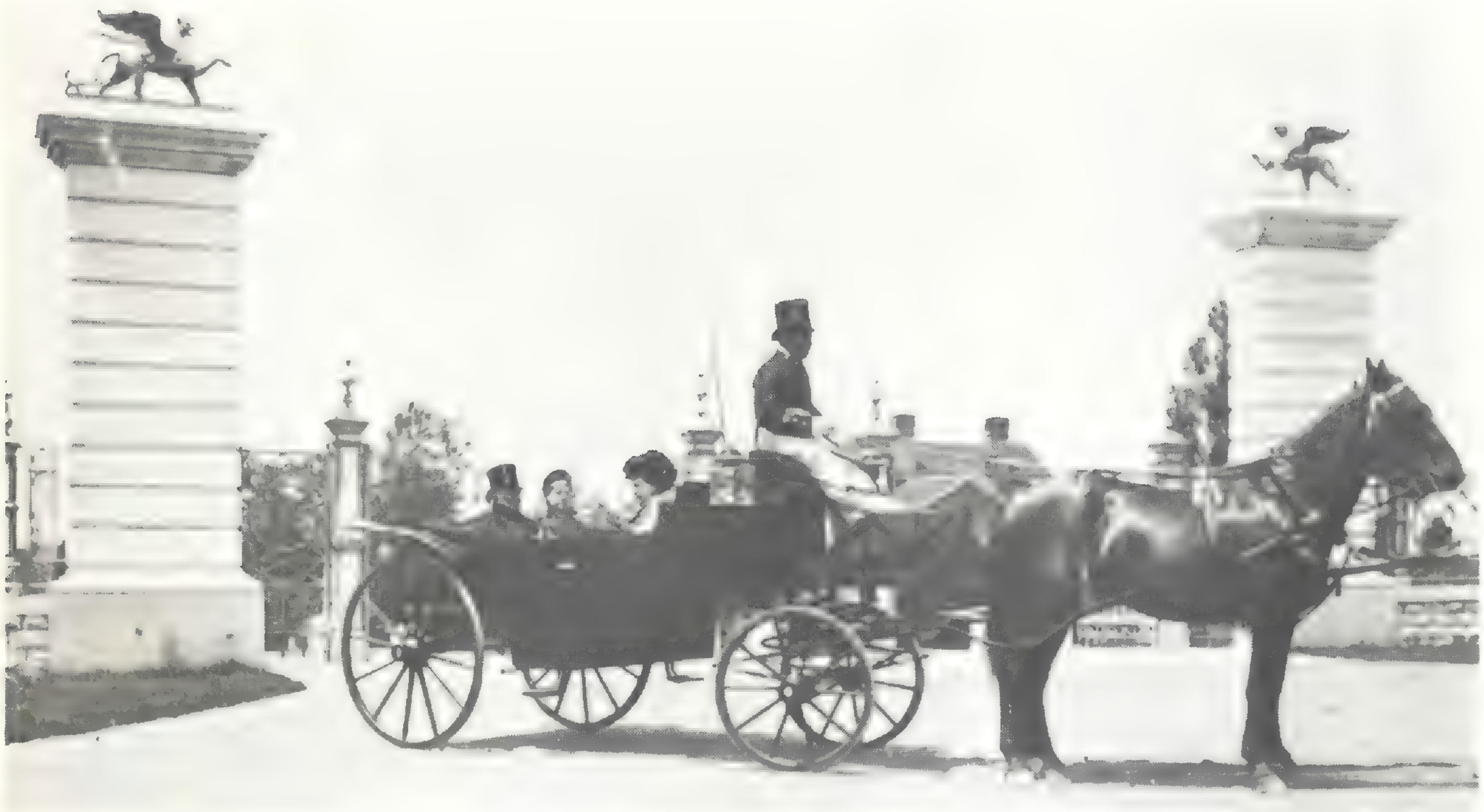
Under Henry Shaw's personal supervision, the transformation of a bare field to a verdant English park moved rapidly ahead. He oversaw the design of four stately carriage entrances and commissioned some of the finest artisans and craftsmen of the day to execute the ornamental stone and ironwork. The Kingshighway entrance, to which he always referred as "the West Gate at King's Road," was inspired by the works of Loudon, a noted English author on gardening and architecture. It features 40-foot stone towers with battlements and a vine-covered stone lodge for the gatekeeper, who faithfully opened the ornate iron gates every morning and closed them at sunset. The gates were ornamented by lamps. All masonry work at this entrance — towers, walls, and gatekeeper's house — is of a roughfaced ashlar or dark grey limestone. The entrance remains virtually the same today as when it was built in 1870, except the gates are gone and the ornamental wellhouse which was located just east of the gatehouse has been removed. A member of the park staff now occupies the picturesque lodge.

Visitors entering the park via the North Gate drive past 30-foot entrance columns adorned with limestone spheres that were originally in the dome of the Old Courthouse in downtown St. Louis. Mr. Shaw obtained them for the park when the Courthouse was being remodeled.

Entrance iron work was designed and executed by Pauly & Brothers of St. Louis. The 200-foot perimeter strip (for the villas) at this entrance is marked by limestone pillars, each topped by a majestic stag. These zinc figures, weighing 700 pounds each, were



The only "villa" ever built in accord with Henry Shaw's English ground rent concept has been the home of the three generations of Gurneys who've served as superintendents. They've made Shaw's dream a reality for more than 100 years.



Henry Shaw and companions outside the Grand Avenue carriage entrance, built in 1870. The guardian griffins, a cross between a lion and an eagle, symbolize vigilance. Their vigilance pays, because the park's Victorian embellishments remain. So do the griffins (below).

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cast in Berlin. Known as the Magnolia Avenue traffic entrance, it was constructed between 1868 and 1870.

The Grand Avenue traffic entrance, known as the "East Gate," was built in 1870. The iron work was by Shickle and Harrison of St. Louis. The large side piers of oblong blocks of dressed limestone are topped by griffins. According to ancient and medieval mythology, the griffin was an animal usually represented as a cross between a lion and an eagle and symbolized vigilance. The outer piers are ornamented with lions copied from Antonio Canova's weeping lions which adorn the tomb of Pope Clement XIII in St. Peter's Basilica in Rome.

James Gurney stands on a Victoria regia water lily platter.

These zinc figures, like the stags located just inside the North Gate, were designed and made in Berlin. Originally a gatekeeper's house was located about 200 feet northwest of the entrance. It was a simple frame building "of pleasing design" and was to be replaced with an ornamental gatehouse in keeping with the other entrance gatehouses. Due to lack of funds, Shaw's plan was never realized.

The Arsenal Street traffic entrance, or "South Gate," was built at the same time as the other main entrances in 1870 and 1871. The iron work was by Pauly & Brothers of St. Louis. The charming gatehouse at the South Gate is in "English country style," and was completed in 1888, the last of the park buildings to be completed by Mr. Shaw before his death. A very sound building structurally, it is now restored for use as the park headquarters and visitors' center. Close to this gatehouse is a charming "wellhouse," one of twelve built in the late 1870's.

A Bit of Architectural Antiquity

No English park was complete without a pond on which children could launch their toy sailboats. Mr. Shaw obtained a gracefully tiered fountain for the sailboat pond he designed for Tower Grove Park. The

The statue of German naturalist Alexander von Humboldt, a gift of Henry Shaw, was unveiled in 1878 amidst festivities including many German societies.

arrangement of weathered stones and broken columns on the north edge of the pond is one of the park's unmistakably Victorian features. During the mid-nineteenth century, authorities on landscape design invariably included in their plans "a bit of architectural antiquity," preferably placed where it could reflect in water. In 1867, the elegant Lindell Hotel, located in downtown St. Louis on the present site of Stix, Baer & Fuller, burned to the ground. From the charred ruins, Henry Shaw salvaged a number of large stone blocks and columns. Although the hotel was only four years old when it burned, the heat of the fire and effects of the water had given the Joliet limestone blocks a weathered, ancient appearance. To the delight of park strollers and youngsters with sailboats the stones were arranged in a pleasing design on the pond's edge.

The Music Stand

As Henry Shaw planned it, Tower Grove Park was to encompass beauty in all its forms, with music and works of art to enhance the natural beauty. The Music Stand, (see cover) a graceful octagonal pavilion with a curved cupola, was built in 1872 and is located east of the Fountain Pond between the Main and North drives. It is encircled by white marble busts of Shaw's favorite composers placed on pedestals of polished granite. These works of art were gifts of Mr. Shaw to the people of St. Louis. The busts of Mozart and Rossini were executed by Howard Kretschmar, St. Louis sculptor; Wagner and Beethoven by Ferdinand von Miller of Munich; Gounod and Verdi presumably by Ross C. Adams, the sculptor who did Juno and Victory in the Missouri Botanical Garden.

The first concert given in the Music Stand was in 1873 and was followed by regular summer concerts on Sunday afternoons. An effort was made to supply first-class music "without making the programme so severely classical as to interfere with its general appreciation and enjoyment." Early day notes show that Posthlewaite's Band furnished the music in 1883 and the St. Louis Grand Orchestra participated on other occasions. Despite the number of carriages on the concourse on Sunday afternoons, it was reported that no serious accident had occurred to mar the concerts. The Music Stand is a favorite location for weddings in the park. It was recently wired for electricity and it is hoped that its use may be resumed for public entertainment.

Statues

Other works of art in the park were also part of Henry Shaw's plan. In 1878, he generously presented to the city two bronze statues which, at the time, were among the more noteworthy in the United States.

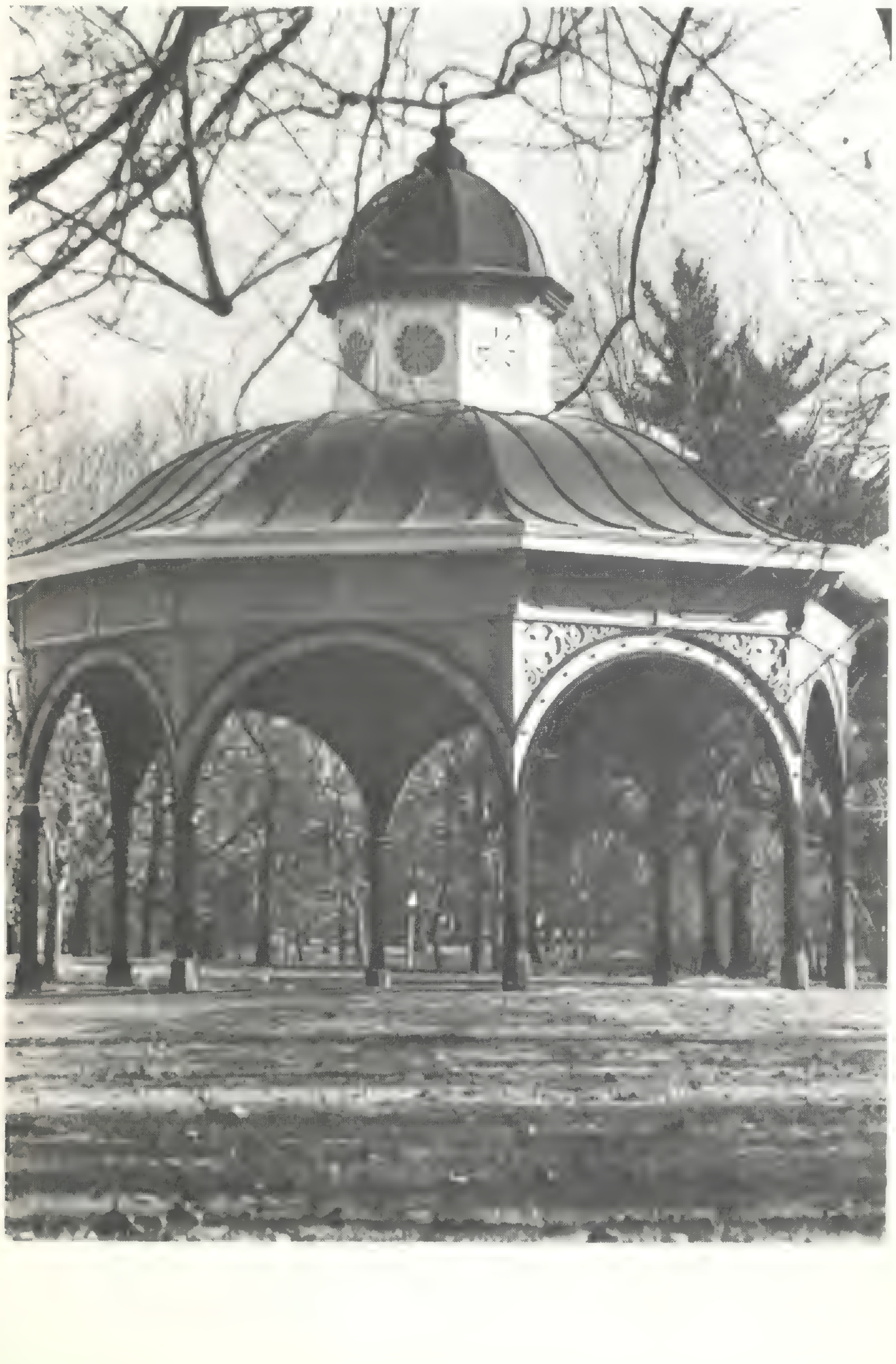
The first presentation was the statue of Shakespeare which was unveiled on April 23, 1878, the 314th anniversary of the playwright's birth. In the fewest possible words, Mr. Shaw formally presented the statue and Acting Mayor Lightner, in the absence of Mayor Overstolz, accepted the gift on behalf of the citizens of St. Louis. The statue was designed and executed in bronze by Ferdinand Miller of Munich, who later became the Baron von Miller and first president of the International Exhibition of Art. He had apparently been recommended to Mr. Shaw by his good friend and architect, George I. Barnett. Mr. Barnett was the first European-trained architect to reside and work in St. Louis. His designs include many of Tower Grove Park's architectural highlights as well as the distinctive pedestals for the statues.

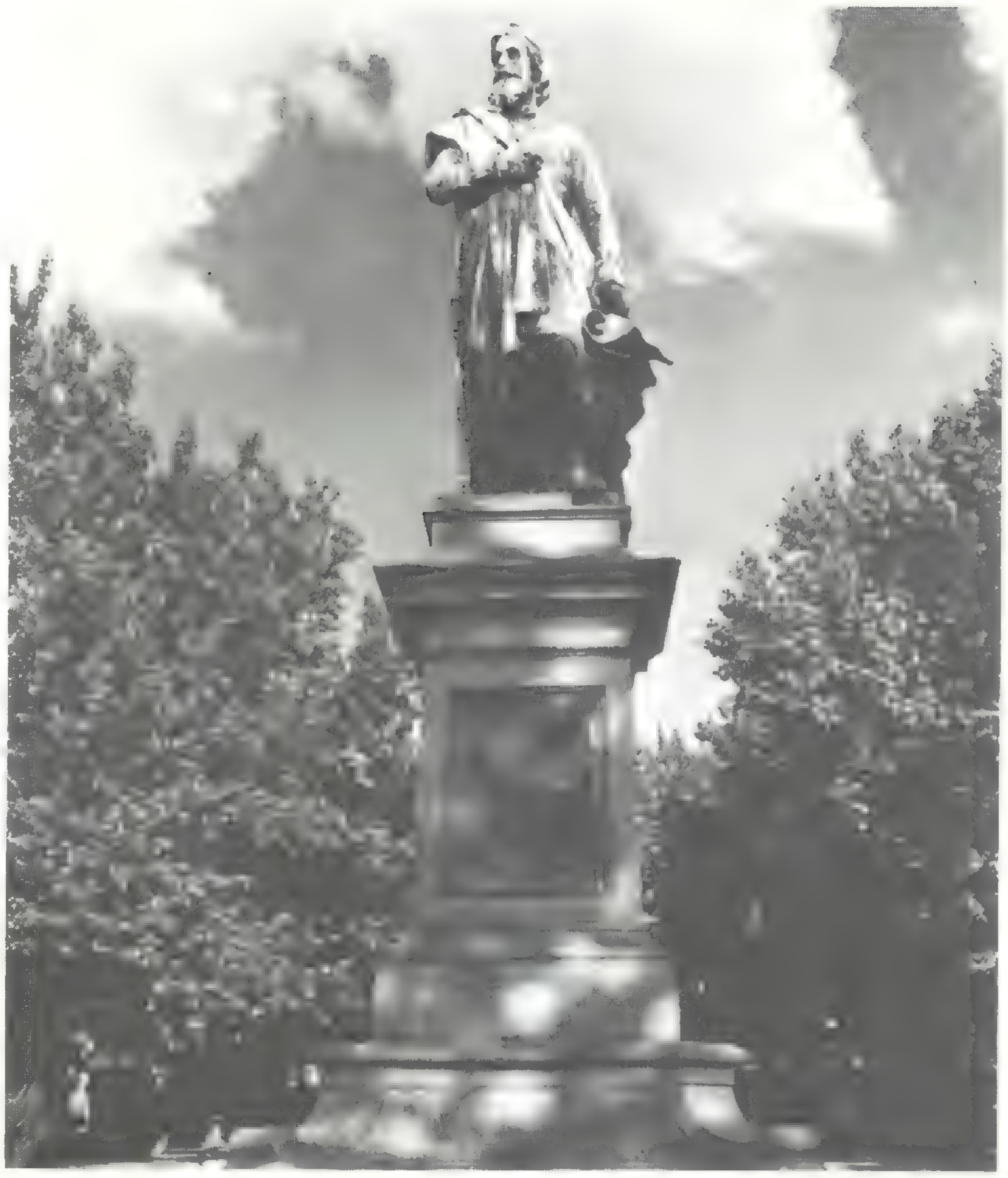
On November 24, 1878, the second bronze statue, that of Alexander von Humboldt, German naturalist and Amazon explorer, was unveiled. This statue was executed by Miller, also. The presentation ceremony was a far more elaborate one, as it was an occasion for all the many German societies in the city to gather. Five turnvereins, the Saengerbund, Liederkranz and other groups participated. There was a long procession, band music, much oratory and masses of people packed into the park. Not including the pedestal and setting-up expenses, the cost of each statue delivered to St. Louis was $5,000.

For many years, Mr. Shaw discussed with sculptor Miller his ideas for a statue of Columbus for Tower Grove Park. There was much amusingly revealing correspondence which gives an inkling of Mr. Shaw's very determined ideas on the subject. At times he apparently wounded the artistic feelings of the sculptor, as Miller's letters alternate between hurt pride and awareness of the generosity of his American benefactor whom he wanted to please. The heroic statue — the first bronze figure of Christopher Columbus in America — was unveiled in 1886.

Friedrich von Steuben

Since the generous gifts of Henry Shaw in the last century, only one statue has been added to the park and this very fitting and welcome addition stands north of "The Ruins." It is the figure of Baron Friedrich Wilhelm von Steuben, whose military genius gained recognition in Prussia where he served as a military instructor and aide-de-camp to Frederick the Great. At the urging of Benjamin Franklin and others in Paris, he came to America, was appointed inspector-general under General George Washington, and immediately set about reorganizing and disciplining the American Revolutionary forces at Valley Forge. Promoted to the rank of major general, he served the Continental army with distinction and honor. The statue was given by the German government to the St. Louis World's Fair in 1904. In grateful recognition of von Steuben's services to the American people in their struggle for liberty, the Richard Barthold Unit No. 28 of the Steuben Society of America presented the statue to Tower Grove Park on August 25, 1968. The sculptor is unknown. This welcome addition was made possible through the untiring efforts of Henry Bushmann, active Steuben Society member and loyal friend of the park.





The first bronze statue of Columbus in the U.S., unveiled in 1886, was done by Baron von Miller of Munich, as were the Shakespeare (see cover) and von Humboldt statues— all three commissioned by Henry Shaw (left), One of the fanciful gazebos inspired by Shaw's first European trip.

Gazebos

Another distinctive feature of the park is its gazebos, the charming Victorian shelters which today are a special part of its unique atmosphere. On his first European trip, Henry Shaw was fascinated by the beauty of the gazebos in England in their varying styles — the Anglo-Chinese temple houses of Kew Gardens, the medieval structures in the royal parks of Windsor and Hampton Court, and the Tudor and Stuart summer houses reminiscent of watch towers. He later saw the temple gazebos of the Petit Trianon at Versailles in France, the solid "koepels," or garden teahouses, in Holland, and the various Gothic gazebos in Germany, Spain and Italy.

When he designed his "ornamental pleasure gardens" in Tower Grove Park, he built ten gazebos, adaptations of those he had seen on his travels. He called them structures "for posterity," designed to "afford shelter from showers and sunshine" and provide places "where a drink of refreshing water" could be had. The large gazebo near the Arsenal Street traffic entrance was designed originally as a dovecot, with the base of the top cupola "arranged for pigeons and other birds." Near the East Gate is the largest of the shelters, its tin roof entirely supported by wood columns. Built in 1874, it is known as the "Sons of Rest Shelter" because of its frequent use by older persons. An attractive feature to park visitors is the Chinese Pagoda with its delightfully fierce dragon heads. Another gazebo was once the center of a children's playground and trellised croquet court. Some of these fanciful structures protected wells that provided drinking water for visitors. Across from the Fountain Pond is the building which was once the center of a parking area for carriages and horses, a convenience for those attending the concerts or strollers through the famed water gardens.

Architects

There remains some uncertainty about the exact contributions of various architects to Tower Grove Park. An Historic American Buildings Survey (known better by its acronym HABS) commissioned by the Board of Commissioners in 1974 and 1975 clarified considerably the respective roles of Henry Shaw, Francis Tunica, Eugene L. Greenleaf, Henry Thiele, and George I. Barnett as architectural contributors to the structural beauty of the park. From evidence derived from the HABS extensive research, it is no surprise that Henry Shaw is revealed to be the chief designer of the park, working in close collaboration with the architects he employed. It is probable that Shaw, working in concert with Francis Tunica, employed as engineer and architect of the park in the years 1868-71, designed and supervised the building of the first and only "villa" in the 200-foot perimeter strip. This is now the Gurney residence. Other contributions of this team include the North Gate and gatehouse (the latter no longer standing), the East Gate and its former gatehouse, West Gate and gatehouse, stable, stone house near the stable, and six bridges.

Eugene L. Greenleaf is credited with various park pavilions erected in 1871-72, after the end of Tunica's employment. These include the children's playground shelter, ornamental wellhouses, the Music Stand, Sons of Rest Shelter, Turkish Pavilion, and the lily pond summer house. Henry Thiele apparently drew maps and other plans for the park, as well as designed the Chinese summer house and other summer houses and wells. George I. Barnett designed both palm houses, the South Gate and the beautiful gatehouse restored in 1976 for use as the park headquarters and visitors' center. He did the pedestals for the park's major statues. Since Barnett and Shaw were close friends, it is quite possible that he collaborated informally on other plans and designs for the park, and the other architects may have been Barnett associates at some time, or at least may have been referred by him to Shaw.

The Passing Years

Through the years, annual reports and records have chronicled the accomplishments and problems of Tower Grove Park and the city it graces. The first annual report, published in January, 1871, by Comptroller Henry Shaw, furnished an inventory of property and estimates for the coming year. It lists stables and sheds built for horses and vehicles, tools, towers, stone piers, entrances, iron bridges, and a house for the foreman and stableman. Stamps and stationery cost $70.87 that year.

With the passing years, Tower Grove Park remained one of the unchanging facets in the neighborhood, its unique features lovingly and faithfully preserved and carrying the 19th century into the 20th. The park's records reflect major events in the history of the city and of the nation. Parts of St. Louis were leveled by the devastating tornados of 1896 and 1927. The park suffered damage but survived. Its priceless trees were threatened by the smoke from the soft coal burned by industries and residences. Successful measures were taken in the mid-'30s and '40s to clean up the air. The trees, and those responsible for their care, breathed easier again. The thirties brought the great depression and homeless people sleeping in the park at times. An unusually severe heat wave also forced many, in those days before air conditioning, to leave their homes for a cool night's sleep in the park.

Bernice Gurney, Superintendent

World War II had erupted when Bernice Gurney, daughter of James Gurney, Jr., and granddaughter of James Gurney, Sr., became park superintendent and secretary to the Board and in her first annual report she noted that "Tower Grove Park was contributing much in helping maintain community morale . . . by making possible the relaxation through recreation so vitally essential during a war year." Manpower was in short supply in the war years and a "boypower" program was tried, with elementary and high school boys permitted to take full and part-time jobs to assist with summer maintenance. Judo instruction and a "junior commando" program were added to the children's recreation program.

The recreation program has continued to expand through the years, with square and folk dancing, tennis clinics and instruction, baseball, softball, corkball, soccer, bicycling, hiking and jogging popular. The park is the scene of many Scouting activities, as well as neighborhood fairs and festivals, art exhibits, antique car displays, sing-outs, concerts and weddings.

Tennis Pro Earl Buchholz, Sr., teaches a group of novice tennis players — a handful among thousands Earl has taught under auspices of a Tower Grove Park tennis program sponsored by the St. Louis Jaycees.

Memorial to Henry Shaw

Although Tower Grove Park exists because of the generosity of Henry Shaw, there was nothing in the park to indicate this fact until 1952. The Board of Commissioners at various times had considered the subject of a memorial to him, but nothing seemed appropriate. The park had become a tennis center and its clay courts were much in demand, but difficult and expensive to maintain. The Board decided to construct a new tennis facility to be known as the Henry Shaw Memorial Tennis Courts. The plans provided for twelve all-weather lighted courts and a dignified stone entrance archway to complement the natural setting and other structures in the park. A paved square dance area was provided, also.

The dedication ceremony on August 3, 1952 included the unveiling of a bronze tablet bearing a bas-relief profile of Shaw which had been transferred from its original location on the pedestal of the Humboldt statue. The event inspired Irving Dilliard of the *St. Louis Post-Dispatch* to write an editorial:

"Onlooker at a Tennis Court"

"Henry Shaw had no children. In fact he never married. When he died . . . he was in his 90th year — a venerable survivor of a generation that had closed ahead of him. But old Henry Shaw had spent those extra years thinking about the children-to-be of the city he had adopted as his own . . . He knew that people liked to walk in green parks, such as he had known in London. He remembered how boys and girls played games and enjoyed the pools and flowers. And so, after he retired, he gave St. Louis his Tower Grove estate for a park . . .

"At 2 o'clock this afternoon a stone gatehouse with a long forgotten bronze bas-relief of Henry Shaw, and 12 all-weather tennis courts will be dedicated in Tower Grove Park. There is something pleasing about the thought that, in memory of the grand old man who had no children, tennis balls will soon be whizzing over the net as sun-bronzed boys and girls leap in the air to smash hits . . .

"Yes, the kindly spirit of old bachelor Henry Shaw is certain to move along the sidelines when the first love game is played on Tower Grove's new courts."

In later years, two more plaques, the work of American sculptor William C. Severson, were placed in the Henry Shaw Memorial Tennis Gatehouse. One is of Dr. George T. Moore, who was president of the park's Board of Commissioners from 1925 to 1949 and Director of the Missouri Botanical Garden from 1912-1953. The other plaque is of the three Gurneys who have served as park superintendents. The unveiling of these plaques was held July 19, 1958.

The all-weather lighted tennis courts have continued to be an important asset in helping to meet the increased interest in this sport. Year-round tournaments (including the midwinter Polar Bear) and exhibitions are held on the courts and attract citywide competitive play and name pros, as well as give much pleasure to the spectating public. The Tower Grove Tennis Club (largest in the city) and pro Earl Buchholz, Sr., have for many years cooperated in an ongoing training program of high quality for junior players. Under the able leadership of Buchholz, thousands of boys and girls have developed their skills and many tennis scholarships have been earned.

Fountain Pond Benefactors

Over the years the Fountain Pond and its Victorian "ruins" had fallen into disrepair. In 1970, a bequest from the late Elsie Strobel made it possible to renovate, clean and deepen the pond. The stones from the burned Lindell Hotel were placed in their original arrangement and the graceful balustrade was restored. Miss Strobel, a teacher in the St. Louis schools, had spent many happy hours bird watching in Tower Grove Park and her generosity assured that at least one prominent feature of the park she loved would provide enjoyment for future generations.

The original Victorian fountain was restored and lighted in 1975 through the generosity of Mrs. Oscar E. Buder. The gift was made in memory of her husband who had served as a distinguished member of the Board of Commissioners for 31 years. Members of the Buder family attended the fountain lighting ceremony, recalling happy childhood days when they sailed toy boats on the pond.

Financial Needs

Several business concerns have made substantial gifts, enabling the commissioners to improve the park facilities in various ways. These corporate gifts have been of significant value because they have met special urgent needs.

Another recent gift made it possible to begin improvements on the playground. A much-needed new concession building was completed in time for the opening of the 1976 summer season. This essential facility and the restoration of the Arsenal Street gatehouse for the park headquarters are only partially financed. Other restorations and new installations are needed. Structural members of some of the gazebos should be replaced, and the Gurney home near the North Gate, the only "villa" constructed by Henry Shaw, is in need of major repairs. There is a serious problem in financing and maintenance of the park. Caring for historic buildings is extremely expensive. Many of these are in need of an almost complete renovation.

There are other priorities — a recreation area for senior citizens in the Grand-Magnolia vicinity, repair and cleaning of statuary, major repairs to drives and walks, the tennis court renovation and new courts to accommodate the increased interest in the sport. An imaginative new children's playground with many innovative features is under consideration. In collaboration with the Missouri State Conservation Department, a long-range reforestation program for the park's priceless heritage of trees is being planned.

Without a continuing program of restoration and preservation, there is no way to avoid a gradual, but progressive deterioration of the park and its facilities. At stake is not only the future of the park, but of the south central area of the city for which Tower Grove Park and the Missouri Botanical Garden provide a vital anchor. The policy of the Board of Commissioners has been to develop and preserve the park to the best of its ability, to keep its historic atmosphere, and to have it provide the neighborhood and metropolitan community with the recreational resources for which it is fitted. The park's major function is to provide recreation in a setting of beauty and interest, and thus stimulate an enduring residential community on the south side.

The Dedicated Park Staff

The operation and maintenance costs have always been less than most parks of comparable size. This very efficient and effective operation has been accomplished by a small, but very loyal and dedicated, staff which is deeply involved in the park and has given many years of devoted service to it. Until her retirement in 1976, this staff has been under the able leadership of Bernice E. Gurney, superintendent for 33 years. Miss Gurney was most capably assisted by Lawrence Weinreich who retired in 1968 after almost 50 years of service, 38 years of which he served as park foreman. When park visitors admire its natural beauty, they do not know how deeply indebted they are to the inspired genius and efficient service of August Fogt, landscape gardener and foreman. Gus is now in his 20th year of service of Tower Grove Park.

IN CONCLUSION

As alluded to earlier, a widespread misconception exists that Henry Shaw left an endowment for the maintenance of the park. However, from the outset — and spelled out in the deed conveying the land to the city — was the agreement that the city would appropriate funds annually for the maintenance and operation of the park. Considerable credit is due recent city administrations that, in spite of a shrinking municipal tax base, a sincere effort has been made to meet the park's basic maintenance needs. Basic maintenance, however, will not assure the preservation of the park and its architectural features. Community Development funds are assisting to a limited extent with gazebo restoration and necessary repairs to walks and streets.

The only other sources of income are occasional gifts and bequests from public-spirited citizens who appreciate the priceless heritage which is Tower Grove Park. The Board of Commissioners has followed a policy of using gifts and bequests with some matching grants for the restoration of the park's historic buildings, statuary and other unusual features. Reforestation is among the priorities and an effort is now under way to clear overgrown shrubbery and reforest with trees selected for their unusual interest and beauty which are adapted to the climate of Missouri, following the pattern established by Henry Shaw.

Throughout the changing times, the park's charm has remained unchanged. The lions still repose peacefully atop the outer piers of the East Gate and the fanciful griffins stand guard as one enters the treelined Main Drive. Winding footpaths lead one past whimsical gazebos, the wellhouses, the Music Stand and its esplanade encircled with marble busts of the great classical composers.

Two of the eight columns are not adorned with statuary. Henry Shaw had planned for likenesses of Donizetti and Sir Arthur Sullivan to complete his "musical circle," but he died before arrangements were completed with the sculptor. It is one of the few details of his plans for Tower Grove Park left undone and it is somehow appropriate that the commissioners have left it incomplete as a silent tribute to this great man.

The vision of Henry Shaw of a "place of beauty to be enjoyed by St. Louisans in all walks of life" became a reality over a century ago. His dream place has been carefully nurtured and preserved. To endure for future generations, it must continue to have the help and support of St. Louis people who share Shaw's love of our city, devotion to our rich architectural and cultural heritage, and dedication to beauty in all its forms.

— ACKNOWLEDGEMENTS —

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All other Commissioners for helpful copy suggestions.

TOWER GROVE PARK, 4255 Arsenal Street, St. Louis, Mo. 63116 (314) 771-2679

BOARD OF COMMISSIONERS

	Appt.
Mrs. John W. Calhoun	1965
Robert J. Gaddy	1971
Carroll C. Gilpin	1966
Gerhardt Kramer	1971
Eldridge H. Lovelace	1971
Dr. David H. Nicholson	1950
Dr. Peter H. Raven	1971

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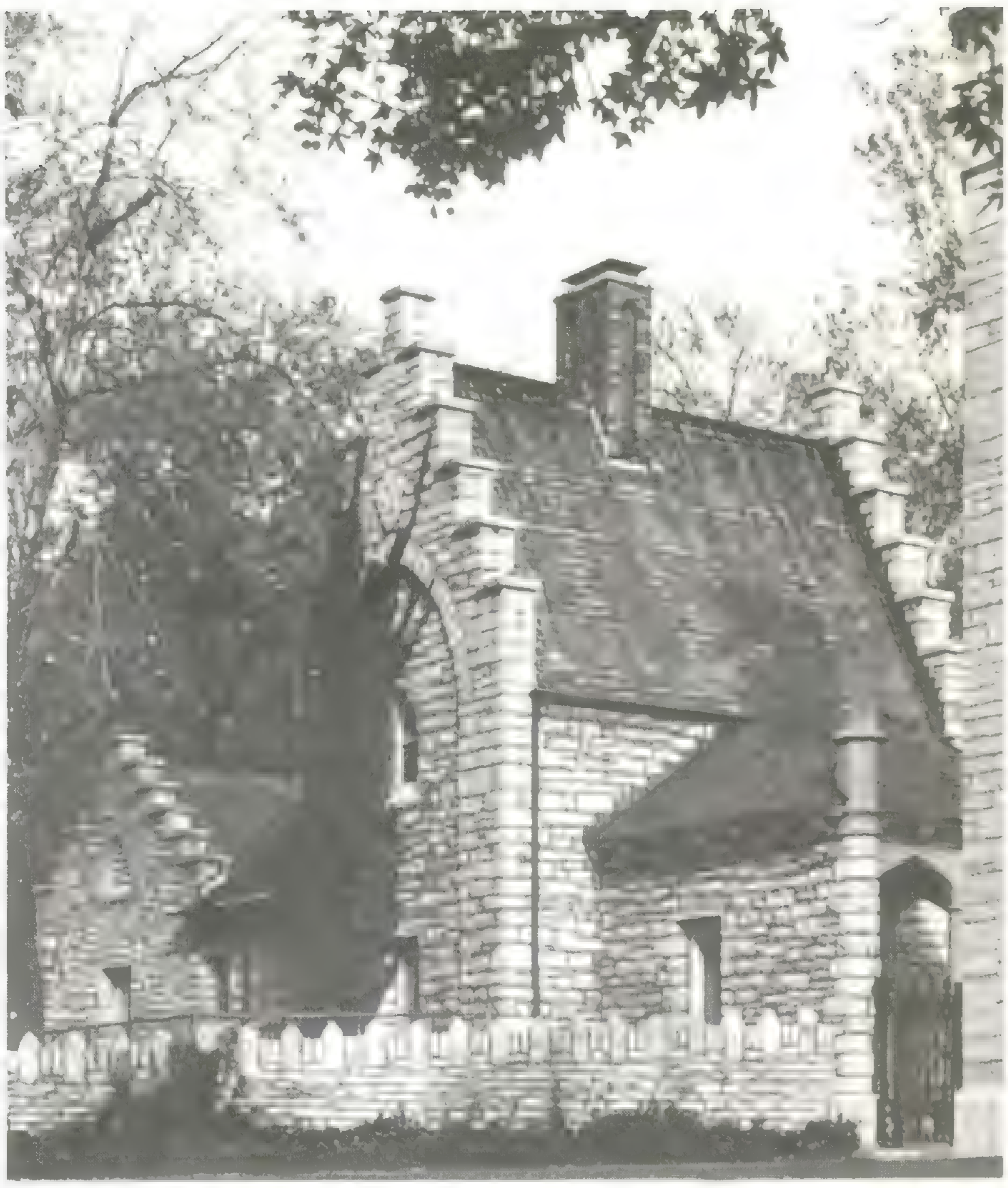
James Gurney	1889-1920
James Gurney, Jr.	1920-1943
Bernice E. Gurney	1943-1976
Robert F. Denison	1976-

The companionship of the long distance runners. The park provides for many leisure needs of area residents of all ages and interests.



"The West Gate of King's Road," Henry Shaw called the Kingshighway entrance. The imposing battlements, inspired by Loudon, were built in 1870.

FORMER COMMISSIONERS

Henry Shaw	1867-1889
Charles P. Chouteau	1867-1901
James P. Thomas	1867-1874
William F. Ferguson	1867-1889
Adolphus Meier	1867-1889
Robert A. Barnes	1874-1886
John H. Lightner	1884-1893
William Trelease	1889-1912
Henry C. Haarstick	1889-1916
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Oscar E. Buder	1919-1950
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Edmund R. Kinsey	1934-1955
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Arthur Schwarz	1966-1971

MISSOURI BOTANICAL GARDEN BULLETIN
2345 Tower Grove Avenue
Saint Louis, Missouri 63110

SECOND-CLASS
POSTAGE
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AT ST. LOUIS, MO.

With this special Tower Grove Park issue the Bulletin expands to 12 issues per year. Membership and tribute listings will return in September's issue.

Missouri Botanical Garden Bulletin

DAFFODILS SPRING ETERNAL

The Shaw Arboretum's superb and historically significant naturalized daffodil collection has continued to increase in extent each year.

Digging and separation of the bulb clumps have been long overdue. So, this spring, Dr. William M. Klein, assistant director of the Garden, and David Goudy, superintendent of the Shaw Arboretum, realized that harvesting the excess bulbs would not only improve the display but also provide an opportunity to share with members, new and old, a "thank you" dividend from the Arboretum at Gray Summit. (For details, see the announcement in this issue.)

Narcissus, the genus to which daffodils belong, have been grown by English and Dutch commercial growers and breeders since the 1880s. U.S. domestic production and breeding were delayed until the 1920s when U.S.D.A. Quarantine 37 was imposed on plant materials from abroad. Some European growers then moved to America and settled on both coasts where conditions favor daffodil production. Mechanized cultivation of bulbs originated in the U.S.

Most of the early hybridizing, both here and abroad, concentrated on modifying and improving size, shape and color. A major part of the important work of selecting and evaluating narcissus varieties for perennial hardiness and dependability appears to have been initiated here at the Missouri Botanical Garden by Dr. Edgar Anderson and the St. Louis Chapter of the American Daffodil Society.

Fortunately they had ample material to work with because, at regular intervals since the Shaw Arboretum was first acquired, many cultivars and varieties of narcissus have been planted, primarily in the Pinetum area. The plantings were enlarged and carefully studied, especially in the period 1938 to 1942. Those varieties observed to have a sufficiently rugged constitution to compete with bluegrass turf were moved into the natural amphitheater adjacent to the collection of oriental crabapples. Then 30 other previously tested varieties were set out in the same area. The objective was to provide a continuous and massive display from the time of the yellow trumpet daffodils in early March until the last of the Poeticus Narcissi some two months later.

In subsequent years, these bulbs have been largely undisturbed and have multiplied profusely. Each clump of daffodils may now contain several hundred bulbs and the collection as a whole must run literally to the millions.

Dr. Anderson, who contributed so much to the fields of taxonomy and ethnobotany during his 46 years at the Missouri Botanical Garden, was particularly fond of

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September 1976

daffodils. He wrote several articles on narcissi for the Bulletin (1934, 1942, 1946) and devoted much time and energy to the evaluation and improvement of the Garden's collections.

In the late 1950s, together with Dr. Fritz Went, Dr. Anderson organized a Daffodil Committee at the Garden to pursue several objectives: developing a daffodil display and test area for visitors to use as an aid in selecting varieties for use in their own gardens; cultivating and propagating a large number of unnamed hybrids willed to Dr. Anderson by Edwin Powell, a well-known hybridizer from the East Coast; and, most significantly, observing and selecting hardy varieties of narcissi which would withstand St. Louis' late freezes and detrimental weather.

This work continued more than five years. Subsequently, the St. Louis Chapter of the American Daffodil Society was disbanded and Garden priorities revised. In 1976, however, we are finally accomplishing one of the goals of Dr. Anderson's Daffodil Committee — distributing narcissus bulbs to gardeners throughout the St. Louis area.

September and October are the best months to plant narcissi. A deep, heavy but well-drained soil is ideal for successful cultivation. All bulbs should be covered to a depth of one and one half times the length of the bulb. Shallower planting tends to make the bulbs split up too quickly while deeper planting reduces the height of the stem and makes the narcissi a little late in flowering. An application of bone meal is beneficial at planting and as a top dressing in subsequent years and it is advisable to apply a light mulch soon after the ground has frozen. Three to four weeks of leaf growth following flowering is sufficient and the leaves can then be removed.

Narcissi are generally thought to be most effective when the plantings are naturalized in a meadow or woodland. They are excellent in semiformal lawn areas and can be grown in lawns which are mowed regularly as long as mowing is not undertaken for a month or so after flowering. Narcissi can be forced in pots or bowls and do extremely well in rock gardens. Several species of dwarf narcissus are used in groups on rock gardens.

The words "daffodil" and "narcissus" are often used interchangeably. The genus Narcissus which contains about 60 species is divided horticulturally into sections called "Divisions," dependent on flower form and species origin.

Varieties related to the jonquil have very sweet-scented flowers, oils from which are used in perfumes. Their flowers are smaller than daffodils and usually clustered two or three on a stem. In fact, the true jonquil, *Narcissus jonquilla,* does not do well throughout most of the U.S. and is seldom seen here.

The Royal Horticultural Society acts as the international registration authority for narcissus cultivars. A classification system developed by the Society in 1909 is used to identify the thousands of varieties of daffodil listed in garden encyclopedias and catalogues.

DAFFODIL DIVIDEND FOR ESTABLISHED MEMBERS

Established Garden members who present their membership card at the Plant Shop between September 15 and November 1 will receive a package of daffodil bulbs with growing instructions. Supplies are limited, so please hurry.

The bulbs are also being offered as an inducement in our September solicitation of new members. Even established members may receive a new membership solicitation because the length of lists used did not allow us to cross-check all names. If this happens to you, don't be confused. Just pass the membership offer along to a friend and help the Garden grow.

Daffodils have a special association with the Garden as explained in another article in this issue. This is our way of saying thank you to our old friends and welcome to our new ones.

THE NATION'S LEADING COLLEGE BOTANY TEXT IS BY, GUESS WHO?

With the Missouri Botanical Garden's director, preeminence has become as habitual as brushing teeth. The 685-page text, *Biology of Plants,* by Peter H. Raven, Ray F. Evert and Helena Curtis, has moved into first place as the best selling college textbook in botany. The second edition has sold more than 30,000 copies since it went into print six months ago.

The new first-ranked text, published by Worth Publishers, Inc., 444 Park Avenue South, New York, N.Y. 10016, has been translated into Italian and Spanish, and features nearly 1,000 illustrations documenting every facet of plant growth, development and evolution.

Well organized and clearly written, *Biology of Plants* reveals such intriguing marvels and mysteries as the evolution of the flower, its relations with pollinating insects and other animals, the complex web of interlocking influences and conditions which constitute ecology, and thorough discussions of plant structures and their functions.

To the director and his colleagues, congratulations. All of us may be justly proud — and botanically better informed. *Biology of Plants* is available at the Garden Gate Shop for $15.95 or directly from the publisher (above) for an additional 75 cents for postage and handling.

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A MULTI-FACETED AMBIANCE OF BOXWOOD: A NEW GARDEN FEATURE

EDITOR'S NOTE: This is the second of two stories announcing an exciting new garden within the Garden. The first, a history of boxwood and a tribute to Edgar Anderson, appeared in your July, 1976 BULLETIN.

The Edgar Anderson Memorial Boxwood Garden lies between the Anne L. Lehmann Rose Garden and the Japanese Garden. Originally a flat, uninteresting and vacant site, it has been contoured into an inviting landscape of mounds and terraces where soon a garden will start to grow.

The design for the Edgar Anderson Memorial Boxwood Garden represents a close collaboration between architect Karl D. Pettit III of the firm of Eugene J. Mackey and Associates, and Harriet Rodes Bakewell, landscape architect.

The "ground sculpture" in this three-and-one-half acre site uses the excess earth from the lake in the adjacent Japanese Garden. Changes of elevation in the basic design of the Boxwood Garden add immeasurably to the opportunities for an element of surprise and allow for a much wider use of the many varieties of boxwood than might otherwise have been possible.

Harriet Rodes Bakewell and Karl D. Pettit III — designers of the Edgar Anderson Memorial Boxwood Garden — confer in the boxwood nursery at the Missouri Botanical Garden.

Both designers have been involved with renovation projects at the Missouri Botanical Garden since October of 1973. As the daughter of Dr. George T. Moore, Director of the Garden from 1912 to 1954, Harriet Bakewell knows the Garden well and is pleased to contribute to the creation of the Edgar Anderson Memorial Boxwood Garden.

"In approaching the design of a garden," says Karl Pettit, "it becomes the intriguing task to understand and shape the garden's landscape as a sculpture — an integrated sequence of three dimensional space. People respond inherently to space and are affected by its elements, elements such as paths, edges, gates, domains and places (symbolic or actual) which can be expressed by nature as well as by hard-edged architectural forms.

"It becomes the task of the imaginative and sensitive designer to develop a garden plan which with cunning intrigues and lures a person through a total garden experience by making use of the traditional spatial elements in a natural way. These elements must be used and designed in proper sequence and with sensitivity to human scale, and a respect for the unique nature of plant material.

"With an organic design, we are blessed with the treat of an ever-changing pattern. A garden will offer new experiences with the drift of time through seasons. A garden will evoke different emotions with changes in sunlight."

The Anderson Garden will focus on the Midwest-hardy boxwoods in which Dr. Anderson took great interest. He sought to disprove the St. Louis notion that although boxwood is beautiful, it can't be grown here. These hardy boxwoods will be displayed in orderly or in some cases mixed groups assembled in a succession of terraces or garden "rooms." The rooms or subgardens will provide a series of boxwood experiences which will show the plant in its diversity of size, form and manner of growth, and in its full range of leaf color, size and shape.

Says Karl Pettit: "The designer must insure that specific subgardens provide a proper setting for boxwood display. There must be an integration and continuity to prevent the garden becoming a single chain of isolated and unrelated events."

The Boxwood Garden is organized along a primary southeast to northwest axis which runs down through the succession of terraces varying in scale. A secondary axis runs parallel to the primary axis and will lead the visitor to more intimate garden rooms and, by a spiral path, upward around an intriguing planted earth mound capped with a small kiosk shelter. From the top, the visitor will be rewarded with a beautiful overview of the Boxwood Garden from this shaded perch.

"The designer should be selective and creative when providing a view or framing an architectural structure," Karl adds.

If we enter the Boxwood Garden from the southeast walk, we will discover a small pond engaged with the entrance terrace. This pond is the water source for a small woodland stream which becomes the waterfall in the Japanese Garden. "Thus, through this water event, the two major gardens are subtly linked," Karl explains.

Continuing down the primary axis from the entrance terrace, we will enter the Balkan room. It is strongly defined by a serpentine fieldstone fountain wall to the south and a kidney-shaped mound on the north. The Balkan room will display the Anderson Balkan boxwoods, including *Buxus sempervirens* 'Edgar Anderson.' The Boxwood Study Group of the St. Louis Herb Society, forerunner of the Boxwood Society of the Midwest, named this sturdy and handsome boxwood for Edgar Anderson in 1973. Dr. Peter H. Raven, Director, says that in this room there will be a memorial to Edgar Anderson, recognizing his many years of service to the Missouri Botanical Garden and honoring him for his great scientific and botanical achievements.

From the Balkan room a visitor moves onto the grand terrace with a long, dramatic view to the teahouse in the Japanese Garden. This view once again links the neighboring gardens with designed intent. "The gardens should join as naturally as the fingers of folded hands," Karl says.

The grand terrace is embraced by evergreen conifers and a judicious mixture of boxwood cultivars selected specifically to display variety in color and texture. The grand terrace will be presided over by a handsome specimen beech tree on the west.

From the grand terrace, we will continue down the primary axis through two increasingly smaller terraces embraced by massive boxwood cultivars such as *Buxus sempervirens* 'Ste. Genevieve' and *B. semp.* 'Hermann von Schrenk.' Both of these plants were named and registered by the study group on behalf of the Missouri Botanical Garden. Clones of both are being propagated at the Garden by the Boxwood Society.

The parterre garden, a contemporary realization of a Renaissance design concept. (From a model.)

"The design intent of this sequence," says Karl, "is to impress dramatically upon the visitor the mass capabilities of boxwood." As these plants reach maturity, their density of foliage and magnificent serenity will contribute to the "hint of mystery" which Harriet Bakewell says must be a part of every boxwood garden.

The secondary axis leads the interested visitor to a secret parterre garden, an Asian room, and to the spiral mound.

The parterre garden, which comes as a delightful surprise as the visitor rounds a great holly tree *(Ilex opaca)* hedge, is the only formal planting in the Anderson Garden. The parterre garden was a favored device of the landscape designers who created the elaborate and sumptuous "pleasure gardens" which flourished during the Renaissance when garden emphasis shifted from the utilitarian to the beautiful.

The name comes from the Old French *par terre,* meaning 'on the ground.' While in some early *par terres* colored stones rather than plants were used to create a design, the term came to mean a rather low flower garden with beds and paths geometrically arranged to form a pattern. In the Anderson Garden the designers have adapted this historic concept to the modern scale and manner. It is a perfect example of another of Karl Pettit's design precepts: "Healthy input can be drawn from tradition." The focal point of the parterre room will be an oval bed. An all-weather path makes the bed completely accessible by foot or by wheelchair — one of the benevolent Mr. Shaw's original priorities for his Garden.

Courses of mellowed brick divide the bed into quadrants where flowers or herbs will bloom in season. East of the bed a serpentine wall will create privacy. In a few years, the Boxwood Society hopes to place boxwood topiary (plant sculpture shaped with shears) in each of the wall's four bays.

Planting of the boxwoods is scheduled to begin in spring 1977. Then the Edgar Anderson Memorial Boxwood Garden will grow into the rich and rewarding opportunity to experience the expressive range of boxwood in all its many nuances. This will be a fitting tribute to a great botanist who loved and promoted these historic and subtly provocative garden ornamentals — a tribute respectfully created with much help from many friends, but especially by the sensitive and ingenious imaginations of two excellent landscape architects.

Mary A. Gamble, President
Boxwood Society of the Midwest

HOW THE GARDEN HELPS PRESERVE TROPICAL FLORA

The collection of herbarium specimens is one of the best ways to preserve a portion of the rapidly disappearing tropical flora. The Garden's Botany Department maintains a collection of about 2.5 million herbarium specimens. These pressed, dried, and labeled plants or portions of plants are attached to high quality paper, stored in metal cases, and, with proper care, which on a per specimen basis amounts to only pennies a year, will be available for study for generations to come.

When the first herbarium specimens were made some 450 years ago, only a minimum of plant information could be acquired from them because of primitive techniques and equipment. Modern techniques make it possible to acquire vast amounts of submicroscopic and chemical information from these simply prepared specimens. Yet more refined techniques in the future promise even more knowledge of unique plant features — much of it currently unsuspected. Perhaps some day it will even be possible to grow plants from specimens thought to be long dead.

In the last year, approximately 54,000 specimens were acquired by the Garden's herbarium through purchase, exchange and as gifts. Of these, most were from tropical areas: over 18,400 from the American tropics and over 18,300 from Africa.

In addition to these 54,000, staff members in the Botany Department collected some 5,000 specimens. These were all from tropical areas, particularly Panama, Colombia, and Peru, where we have active, long-range collecting-research programs. In recent years, staff members have collected in other tropical areas . . . eastern Africa, Madagascar, Ceylon, and most of tropical America.

While much can be learned from herbarium specimens, it is far better to permanently preserve areas of tropical forests. It is impossible to study complex plant-animal interactions from herbarium specimens. It is impossible to sample the entire spectrum of the forests' biota in the short amount of time usually available to any single collector. The Department's staff cooperates extensively with botanists from tropical areas in recommending areas to be set aside as preserves and in studying existing preserves.

3-DAY PLANT SALE — SAVE 20%

The Missouri Botanical Garden's Plant Shop, in the Floral Display House, will double the usual 10% member discount from Saturday, October 2, through Monday, October 4. Cash in on this 20%-off fall plant sale for three days, 9 a.m. to 5 p.m. Need an exotic tropical plant for home or office? Mark your calendar now. Please bring your own boxes or containers.

THE DESTRUCTION OF THE TROPICS*

By Peter H. Raven

The following story is reprinted by courtesy of Frontiers *Magazine.*

The notion that humans could, and indeed should, attempt to classify and name all other kinds of organisms goes back some three centuries. Even in the 16th century, naturalists had begun to write books including several thousand kinds of plants or animals instead of the several hundred that would be familiar in any one local area.

The Swedish botanist Carolus Linnaeus began our modern system of naming plants and animals in the mid-18th century. Linnaeus and his contemporaries, from the vantage point of northern Europe, thought that the number of species of plants and animals in the world was relatively limited — probably more than 50,000 in all. Exploration of the tropics, where probably two-thirds of all species of organisms occur, had barely begun, and collecting was mostly confined to the vicinity of the seaports, where weeds and a few aggressive kinds of animals had spread widely all over the tropical portions of the world.

So far, names have been given to approximately 1.5 million kinds of plants and animals, but for the great majority of these, we know only a name, a very few characteristics and a locality. Probably fewer than half of these species have been mentioned anywhere in the literature even once following their original description.

In order to assign a name to a plant or animal it is necessary to publish a description with the name and to associate the name with a particular specimen. This specimen becomes the type of the species and, like the standard meter, becomes a reference point for assigning that name to any individual collected subsequently.

How many species remain to be named? Estimates vary, but the numbers of new species that are routinely encountered in many groups of organisms, particularly in collections from the tropics, suggests that there are at least twice as many yet to be named as have already been given names. Naturally, the distribution of these unnamed and mostly unknown species is not equal. In temperate regions, perhaps a million of the estimated 1.5 million species have been named; but in the tropics, no more than one in six — perhaps 500,000 of an estimated three million species — have been brought to the attention of science.

Our chances of collecting and naming these "missing" species, so that any record of their existence might be made available to future generations, or so that anything about their potentially useful or other properties might be known, is decreasing rapidly. The reason is the rapid growth of human populations, especially in the tropics. The Food and Agriculture Organization of the United Nations (FAO) estimates that about 40% of the tropical forests of the world have been destroyed during the past 150 years. Virtually all of the remainder will have been cut before the end of this century, during which time the populations of all tropical countries will at least double, given present rates of growth.

According again to the FAO, by the year 1985 some 26 tropical countries, with an aggregate population of 365 million people, will be unable to provide sufficient food to allow their inhabitants to avoid gradual starvation. In addition, there is a rapidly increasing population of some 400 million people who make their living by slash and burn techniques in tropical forests, growing crops for a year or two and then moving on. Since all of the tropical forests will be destroyed during the next 25 years, it is difficult to avoid the conclusion that up to a billion people will starve to death in the tropics during the next three decades. During this period all natural communities in the tropics will be totally destroyed before we can even begin to understand them or to learn how to use them for human benefit.

It was not until the explorations of the great German scientist Alexander von Humboldt in Latin America from 1799 to 1804 that the immense richness of tropical life began to be appreciated. In the American tropics alone, the richest in terms of species of plants and animals of the world's three major tropical areas, there are probably over a million unnamed and mostly uncollected species of organisms. A majority of these will become extinct during the next 25 years, and most will never have been collected even once by the time they disappear from the face of the earth. Most tropical countries, struggling under the burden of explosive population growth and inadequate food supplies, a severe energy shortage and runaway inflation, simply do not have the resources to study the biological communities upon which they are dependent, or to build up the kinds of institutions that would allow them to do so. The so-called developed countries of the world, a few of which have the capacity to produce an excess of food, are devoting relatively insignificant levels of effort to the tropics, even though world stability ultimately depends on what happens there.

Billions of dollars have been spent on the exploration of the moon, and we now know far more about the moon than we do about the rainforests of say, western Colombia. The moon will be there far longer than these forests, and perhaps longer than the human race also. In the forests are found the most complex interacting systems on earth, systems which might even hold the key to our survival, and about which we know practically nothing. Would it not be prudent, during this our Bicentennial Year, to consider allocating more funds for the study of tropical plants and animals while we are still able to do so?

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Mrs. Anne L. Lehmann holds her favorite variety of rose, a Tiffany, while viewing some 5,000 rose plants in the breath-taking panorama of beauty which, during June 4 festivities of Rose Evening, became the Anne L. Lehman Rose Garden, a fitting tribute to honor Mrs. Lehmann's years of generous support of the Garden and especially her help in completing this magnificent new rose garden at the center of the Garden.

Director Peter H. Raven (center) gets an able Japanese Cedar planting assist at Japanese Garden ceremonies from Speaker of the Missouri House of Representatives, Richard J. Rabbitt, Representative from the Garden's home — the 85th District. The nation's largest Japanese Garden owes its rapid development in large part to a $300,000 contribution in general revenue sharing funds through the Department of Natural Resources obtained by the State Legislature of Missouri.

Japanese Cedar (Cryptomeria japonica) *is widely cultivated in Japan and is closely related to our California redwood.*

THE OPERATING BUDGET — WHERE DOES IT COME FROM?

The name "Missouri Botanical Garden" may suggest to many people that the Garden is a State institution and therefore probably receives tax support for its operation. Dr. William Klein, the Garden's Assistant Director, is quick to refute the error of such an assumption. He recites with a kind of ease that only comes from frequent repetition,

> "while the Missouri Botanical Garden is a major tourist attraction in the St. Louis area and an anchor in its St. Louis neighborhood, it does not receive any city tax support for its operation. It is the only botanical garden in the State of Missouri, serving the people of this State for more than 116 years, but does not receive any direct tax support from the State. And while the Garden is an institution of national and international significance, it does not receive any federal support for its operating budget."

As recently as 25 years ago, earnings on endowment were sufficient to provide for practically all of the Garden's needs. Today, earnings on endowment provide for about one-fourth of the operating budget. The Garden has come to rely more and more on revenue generated through sales to make up the difference. The gate fee was increased in March. The Garden Gate Shop, efficiently managed by volunteers, the Plant Shop, the Flower Wagon drawn by a jeep donated by Aspen AMC Jeep, and Tower Grove House, one of the few historical houses in the city operating in the black thanks to the Garden's Historical Committee — all these sales centers are major sources of revenue which emphasize the crucial contribution of volunteers to our operating budget.

In addition, the Garden receives support from the united cultural campaign of the Arts and Education Council of Greater St. Louis. The Garden is also the beneficiary of many patrons who each year make personal contributions. Grants have been received from the Missouri State Council on the Arts for the Japanese Garden as well as a number of sculpture exhibits and performances. Another major portion of the Garden's operating budget is derived from contracts and grants to advance its scientific objectives. In other words, the Garden's support comes from many sources and, as with all such labor-intensive institutions, it has suffered the erosion of the various sources of revenue in an inflationary economy.

In spite of the difficulties of the times, a major outdoor improvement program has been undertaken to bring into being new features such as the Japanese and English Woodland Gardens, the Mediterranean House and the newly dedicated Lehmann Rose Garden. Expansion and improvements of the Garden have been the major goal of the director, Dr. Peter H. Raven, and the Board of Trustees. The approval of the course that the Garden has taken in the years since Dr. Raven has become director in 1971 is reflected in the expanding membership and the very important contribution that members make to the Garden's support.

Four years ago the Garden's membership numbered about 3,000. Recent counts show over 8,000 members and still growing! By far the largest numbers of members belong to the $25 a year category. Since the establishment of a Development Office as an ongoing part of the operation, the Garden has turned more to the higher levels of membership to provide critically needed income. A very active program has been launched to encourage members, when they renew, to increase their membership to the next highest level.

A committee of the Womens' Executive Board, headed by Mrs. John Brodhead, regularly reviews the membership rolls and extends special and personal invitations to come to a slide program and learn more about the many different activities. A "behind the scenes" tour of the Garden and the Lehmann Building follows the slide program. Mrs. C.F.P. Stueck coordinates the guided portion of these very popular visits — the Members Executive Board's way of increasing awareness of wide-ranging Garden activity and also of thanking members for their support.

Ken Peck leads an evening tree walk.

Mrs. Hyman (Audrey) Senturia was recently hired to assist Dr. Klein in the Development Office. Audrey has initiated a number of programs aimed at identifying people who should be interested in what the Garden is doing. The evening tree walks, led by Ken Peck or Bob Dingwall, and followed by a picnic supper have been extremely popular and informative — another way we try to say thank you for your generous support.

On behalf of the Board of Trustees, the Members' Executive Board and all of the Garden staff, we invite you to consider increasing your level of membership when you renew.

Contributing	$ 50
Sustaining	100
Sponsoring	250
Director's Associate	500
Henry Shaw Associate	1,000

If you have any questions about the Garden's development programs, please call Dr. William Klein or Audrey Senturia. They will be more than happy to discuss all aspects of the Garden's operating budget and how you can help insure the continuance of this priceless St. Louis heritage.

DON'T FOLLOW A GUIDING LIGHT WHEN YOU CAN BE ONE

What do the following unfamiliar and intriguing terms have in common: *Yatsuhashi*, *Quercus macrocarpa*, and *Basil purpurea?* These are a few of the many non-household words which guides of the Missouri Botanical Garden learn about and learn to share with others.

Help share the lore, the legend and the legacy of the Garden with visitors — all sorts of people and all sorts of groups from all over St. Louis, the state, the nation and the world. Explaining, showing and answering questions about one of the world's greatest Botanical Gardens is fun and rewarding.

Plan now to join a training course for new guides — eight sessions in January and February, 1977. Call 772-7600, Education Department, for information.

STUDENT VOLUNTEERS SERVING & LEARNING

We owe a special debt to students ranging from junior high school level to those working toward advanced degrees. Their efforts and achievements aren't always apparent to Garden visitors.

Many work in education, teaching grade school children such crafts and concepts as: terrarium construction, the structural differences between various fruits and vegetables and how they're grown, seeding, transplanting, and plant propagation.

Many have served as guides at Tower Grove House, learning and explaining the history of the Garden, its intriguing founder and benefactor Henry Shaw, and his elegant Victorian surroundings.

Many have worked in the Climatron, the Desert House or Mediterranean House, learning valuable botanical lore while contributing valuable service.

In this exchange, all of us are the beneficiaries as knowledge and the Garden grow together.

— Carol Taxman, Chairman of Volunteers

THE GENUS EPILOBIUM IN AUSTRALASIA

Tamra Engelhorn Raven, New Zealand botanical artist, Keith R. West, and Garden Director Peter H. Raven review their collective handiwork — a recently published monograph on willowherbs in Australia and New Zealand.

HUSBAND AND WIFE DECODE THE MYSTERY OF SOUTH PACIFIC WILLOWHERBS

In the field of botanical scholarship, there are few husband and wife collaborative efforts. One of the more recent and successful such collective efforts, with an able assist from botanical illustrator Keith West, is a work co-authored by Peter and Tamra Raven, *The Genus Epilobium (Onagraceae) in Australasia: A Systematic and Evolutionary Study.*

The book, published in June by the New Zealand Department of Scientific and Industrial Research, stems from work done by the Ravens during a year (1969-70) spent in the island country on a Guggenheim Fellowship and a D.S.I.R. Senior Postdoctoral Fellowship.

Despite the scholarly title, New Zealand reviewers have found the work highly readable, beautifully illustrated and of general interest to amateur and professional botanists alike.

The work focuses on the 50 Australasian species of the approximately 200-species genus more commonly known as willowherbs. Scholars consider the work takes on a wider significance as an exhaustive and intensively researched study in plant evolution, tracing the 50 Australasian (New Guinea, Australia and New Zealand) willowherbs to a single Asian progenitor. Rapid mountain building in the South Pacific, unoccupied ecological niches open to colonization by the Asian ancestor, a prevailing tendency toward self-pollination linked with an ability to hybridize — all these factors help explain the profuse speciation in a geologically short time and to support the Raven hypothesis.

The painstaking accuracy and aesthetic perfection of West's illustrations match the thoroughness of the research and writing. Keith West, a staff artist in the Botany Division of D.S.I.R., is currently working here at the Garden completing collaborative research with the Ravens. He will return to Christchurch, New Zealand at the end of September.

LANDSCAPE DESIGN STUDY COURSE OFFERED

The first in a series of landscape design courses set up by the National Council of State Garden Clubs and co-sponsored by the Missouri Botanical Garden, the Federated Garden Clubs of Missouri, the University of Missouri - St. Louis Continuing Education Extension and the St. Louis County Extension Center, will be given Tuesday, October 5, through Thursday, October 7, at the J. C. Penney Continuing Education Building on the University of Missouri-St. Louis campus.

The three-day course will cover the following topics: Civic Projects and Garden Clubs, Development of Landscape Architecture to 1840, Home Grounds, Ecology and Environment, Theory and Basic Principles of Landscape Design, the Professional Landscape Architect, Plant Materials in the Landscape and Roadside Development. The Garden's chief horticulturist, Robert Dingwall, will be one of the instructors.

The course fee is $20. It is open to the public and there are no prerequisites. Registration: 8:30 a.m. October 5 and lectures from 9:30 a.m. to 3:30 p.m. October 6: lectures from 8:45 a.m. to 3:30 p.m. There will be reading assignments for those who wish to take an optional test October 7. The test will be based on readings in the following books: "An Introduction to Landscape Architecture," Laurie, "Landscape Architecture," Simonds; and "The Book of Landscape Design," Ortloff and Raymore. These books may be purchased at the National Council of State Garden Clubs headquarters, 4401 Magnolia Avenue, St. Louis, 63110, on the Garden grounds. For further information contact Dorothy A. Thompson, UMSL Continuing Education Extension, (314) 453-5961.

Courses II, III and IV in this series of courses will be offered in successive years in October. The program, begun in 1952, aims to raise public awareness of good landscape architectural practice. These courses are of special value for those serving on park boards, highway commissions, planning and zoning boards, construction and development.

Gardening in St. Louis

GARDENING IN SEPTEMBER

September's cooler weather will change the regimen of your gardening activity. It is a time for gardening's New Year's resolutions. Take stock, make note of this year's successes and failures and jot down reminders and lessons learned. Then begins the active process of cleanup, renovation and replanting.

Composting

This is a good time to start a compost pile, using the weeds and other debris from the garden. Later you can add the leaves. Be sure to keep the pile wet and add some old compost to the pile to introduce the bacteria needed to break the new material down.

Lawn Care

For the lawn, now is the time to renovate the old or start a new one. If the soil is compacted it should be aerated. Many lawns need to be rethatched. Top dress with a rich top soil high in organic matter, such as peat moss or compost. After the lawn has been thoroughly cleaned, apply the top dressing to a depth of ½ inch over the entire surface area. A well balanced fertilizer and the new lawn seed should be moist until established and there is a regular pattern of rainfall.

New lawns should have the ground well worked up and enriched with organic matter to a depth of 12 to 15 inches. The organic matter should be applied to a depth of 4 to 5 inches and worked well into the soil. Soil tests should be made and if indicated, lime should be added and raked in. The surface should be raked to a fine grade of tilth and all depressions leveled before applying the fertilizer and grass seed. The fertilizer and seed should be raked in lightly, rolled and kept moist. The object is to get the lawn well established in the cool weather.

Buy Now

Incidentally, in purchasing lawn seed, make sure you get seed of high quality; it's generally worth paying a little more!

Spring flowering bulbs will be on sale now, so select as early as possible and store in a cool, dry area until they can be planted. Daffodils should be planted in the ground now, while tulips can wait until October.

Purchase ferns and house plants now so that they may become accustomed to house conditions before winter sets in.

House plants set out for the summer should be cleaned up and gradually moved indoors as the month advances. If insects are present, spray the plants and check to see if plants are root-bound. Repot as necessary and prune back to control shape and size. Cuttings of geraniums, coleus, begonias and others made now will make ideal plants for indoors.

For those attempting to flower Poinsettias for Christmas, plants should be given lots of light during the day, but placed in the dark from 7 p.m. until 7 a.m.; otherwise they will fail to bloom.

Plant Now

Most perennials are best redivided and reset now, with the exception of late fall flowering ones, which should be left until spring. Add plenty of organic matter, such as compost, animal manure or peat moss to the soil with bonemeal and work in well. Mulch new plants well with compost, leafmold or wood chips, as this will keep soil cool and moist, allowing plants to make good growth.

Evergreens may be planted now. Dig the hole twice the size of the root ball and replace the soil with one containing equal parts of organic matter. Water and mulch well. Clean up weeds around other shrubs and evergreens and add fresh mulch.

Do not fertilize roses, shrubs and trees now, as this will not allow these plants to harden off for the winter ahead. Root feeding of these may be done once they are dormant, in early November.

Pruning

Pruning of late summer blooming shrubs should be completed this month. In pruning, cut the plant back to control the height and also to remove some of the heavier stalks at ground level, plus any weak shoots so as to allow air circulation. Also prune any broken limbs or branches damaged in recent storms.

Clean up coldframes now, removing any unwanted plants and weeds, and prepare the soil by adding organic matter. Lettuce, spinach, cabbage, broccoli, and radishes may be started now for late fall use.

Robert Dingwall
Chief Horticulturist

A SENSE OF DEEP LOSS & LOVING MEMORIES OF BRIGHTIE WILL LONG ENDURE

The death of Frances Brightwell Stribling July 17 has saddened the entire Missouri Botanical Garden community.

Mrs. Stribling was a member of the Garden for many years, a past president of the Women's Executive Board and an advisor of valued judgment on many Garden committees. She was also president of the Rowena Clark Garden Club in Kirkwood.

Generous with her knowledge and wise in her counsel, she was always ready to help young members. Her gentle humor and quiet strength were the source of a personal magnetism highly valued by her many friends. She was a pleasure to work with. Brightie's high standards, her love and understanding of plant material and horticulture were beautifully reflected in her contributions and love for the Garden as well as in the creation of her own two entirely charming gardens, each unique yet each a center of serene beauty. It was a pleasure to see her tend her plants with skill and tenderness.

Her unselfishness and compassion were further reflected in her extensive service to the Red Cross. From 1956 to 1965 Brightie served as director of volunteers for the entire midwestern area of the American Red Cross. This and many other civic activities earned her due acknowledgement as a *St. Louis Globe-Democrat* Woman of Achievement in 1960.

Dignity, charm, compassion, deep faith and great personal courage are the valued legacy she leaves those of us fortunate enough to have known her and all of us are grateful to have had a share in her life.

Her first husband, G. Chadbourne Taylor, president of the Mississippi Valley Barge Line Company, died in 1962. In 1965 she was married to G. Carroll Stribling, an attorney.

Besides her husband, she is survived by a son, George C. Taylor III of Houston, a sister, and two brothers.

The family suggests those wishing to honor the memory of Mrs. Stribling make contributions to Grace Episcopal Church, Kirkwood, or to the Missouri Botanical Garden.

A delegation of Japanese dignitaries representing the America Japan Society pose after Japanese Garden tree planting ceremonies which were preceded by an elegant luncheon in the Lehmann Building. During their two-day visit to St. Louis in June, they were lavishly entertained by the St. Louis Chapter of the Japan America Society, Inc.

THE CLIMATRON RECEIVES BICENTENNIAL HONORS

The Climatron, St. Louis' home-away-from-home for plants representing many endangered tropical species, was recently dubbed by experts as one of the most significant architectural achievements of our nation's first 200 years.

The unique aluminum and plexiglass structure built in 1959, admired inside and out by nearly 300,000 visitors a year, was one of six St. Louis structures included among 260 landmarks across the country nominated by 46 architects, architectural historians and critics who took part in a bicentennial survey sponsored by the American Institute of Architects (AIA).

The Climatron, a visual symbol of St. Louis running second only to Saarinen's arch, is one of the earliest realizations of the geodesic dome, an architectural form invented by R. Buckminster Fuller, world-renowned architect and now Professor Emeritus at Southern Illinois University, Edwardsville.

The geodesic dome configuration, reflected by a preamble of lily ponds in millions of amateur and professional photographs, allows the unobstructed enclosure of 1,300,000 cubic feet of space. This opens panoramic vistas for many lush tropical plants to express their full sculptural and spatial potentialities under roof in a 'climate controlled' (from which the word climatron is coined) environment.

The immense weight of the dome's surface — more than an acre of ¼-inch thick triangular plexiglass panels with neoprene gaskets supported by double tubular aluminum framework — is carried to the circular concrete base by five unobtrusive piers. The stress collects so gradually toward these outward elements of support that the dome rises with a light graceful flow of line and shape that seems to defy gravity.

The structure, which predates R. Buckminster Fuller's most widely known geodesic dome (the U.S. Pavilion at Expo '67 in Montreal) by eight years, was the work of Murphy & Mackey architects. The dynamic motive force behind the creation of the Climatron was Dr. Fritz W. Went, then Director of Missouri Botanical Garden.

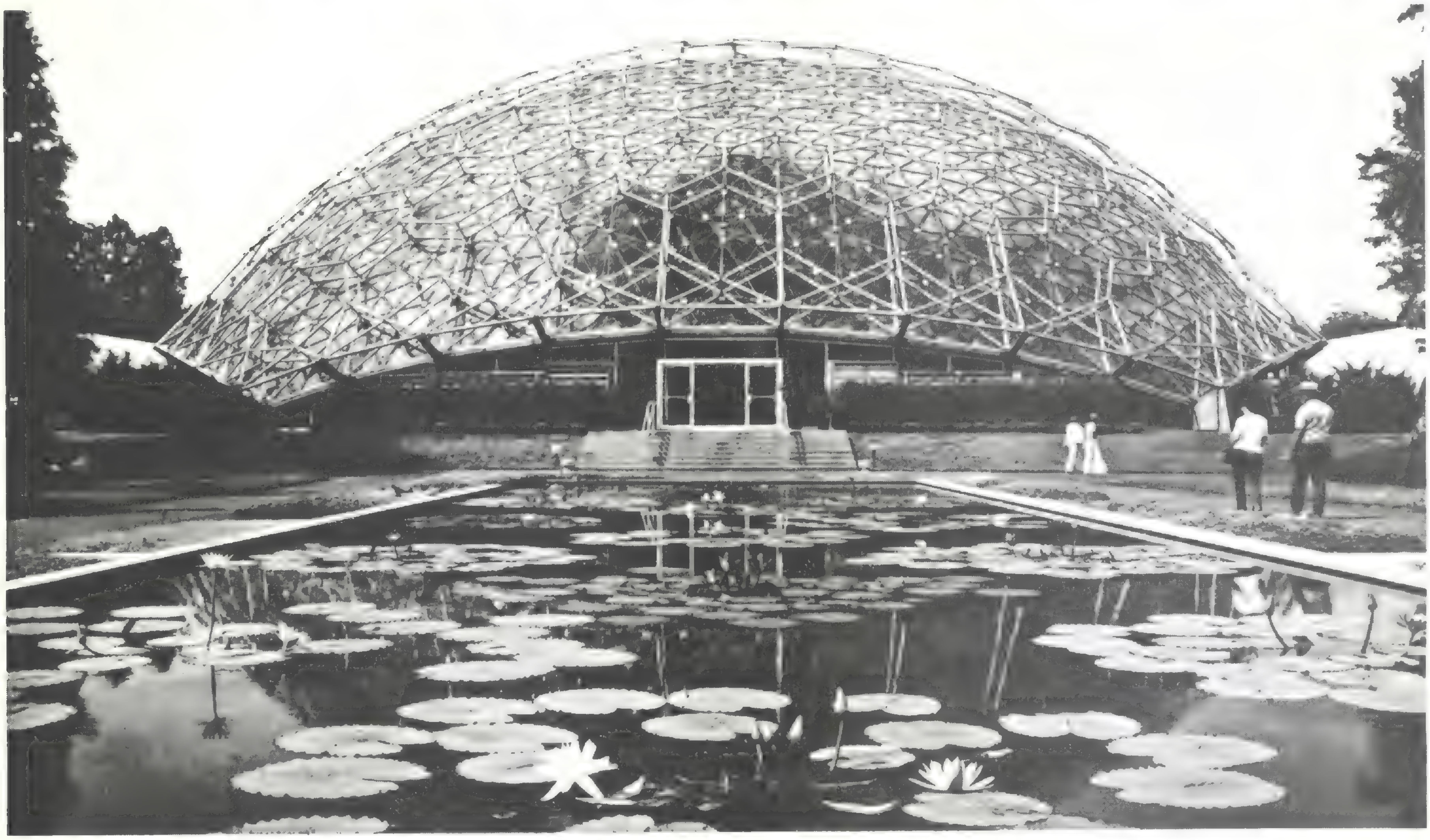
The giant enclosure, 70 feet high, 175 feet in diameter, with a split-level floor space of more than half an acre, is as functional as beautiful.

Two air circulation systems, a heating system which operates on a north-south gradient and a cooling system which operates on an east-west gradient, help maintain a stable tropical temperature and humidity despite the drastic seasonal changes of St. Louis. The upper level supports a basic lowland tropical climatic regime, while the western half, which is 12 feet lower, supports a tropical montane (mountainous) flora. Further variations in soil pH reaction, fertility, drainage factors, and variations in light and temperature based on plant location within the Climatron — all these factors allow a wide range of tropical and subtropical flora to coexist in good health under the dome.

Dr. Charles A. Huckins, Curator of Tropical Plants, notes further that the dome shape recreates our perceived view of the heavens and thereby, consciously or not, creates the perfect sweeping structural showcase for visitors to sense a lush tropical world in miniature.

Our Climatron received in 1961 the R. S. Reynolds Memorial Award from the AIA.

Now, 15 years later, this bicentennial birthday honor reminds us of the tremendous structural, functional and aesthetic triumph of our most dramatic structure — a pioneering achievement and proud part of a growing tradition.



NEW MEMBERSHIPS MAY 1976

Mr./Mrs. Chas. A. Lee
Mr./Mrs. David. J. Lehleitner
Mr./Mrs. R.D. Leighninger, Sr.
Mr./Mrs. J. David Levy, Jr.
Mr./Mrs. John B. Lewis
Mr./Mrs. Leonard W. Lewis
Mrs Marilee H. Lewis
Mr./Mrs. James W. Liddell
Mrs. Ben Lindenbusch
Mr./Mrs. James H. Link
Dr./Mrs. C.M. Linsenmeyer
Mr./Mrs. Robert E. Little
Mrs. Nellie Loane
Mr./Mrs. Emlin Lock
Mr./Mrs. Donald J. Loos
Dr./Mrs. Thomas J. Loughrey
Mr./Mrs. Carl R. Lovitt
Mrs. J.L. Lueck
Mr./Mrs. Michael J. Luepke
Mr./Mrs. Ray Luken
Mr./Mrs. David G. Lupo
Mr./Mrs. Charles Luther, Jr.
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Mrs. Ella Mahler
Mr./Mrs. William P. Mahne
Mr./Mrs. Walter G. Majtas, Jr.
Mr./Mrs. Robert Marquardt
Mr./Mrs. Jack Marquess
Mr./Mrs. John D. Marschalk
Mr./Mrs. Charles W. Marshall
Mrs. Delores C. Martin
Mr./Mrs. Donald Martin
Mr./Mrs. Earl F. Maschmeier
Mr. J. Masek
Mr. John C. Marsden
Mr./Mrs. Jacob J. Mathias, Jr.
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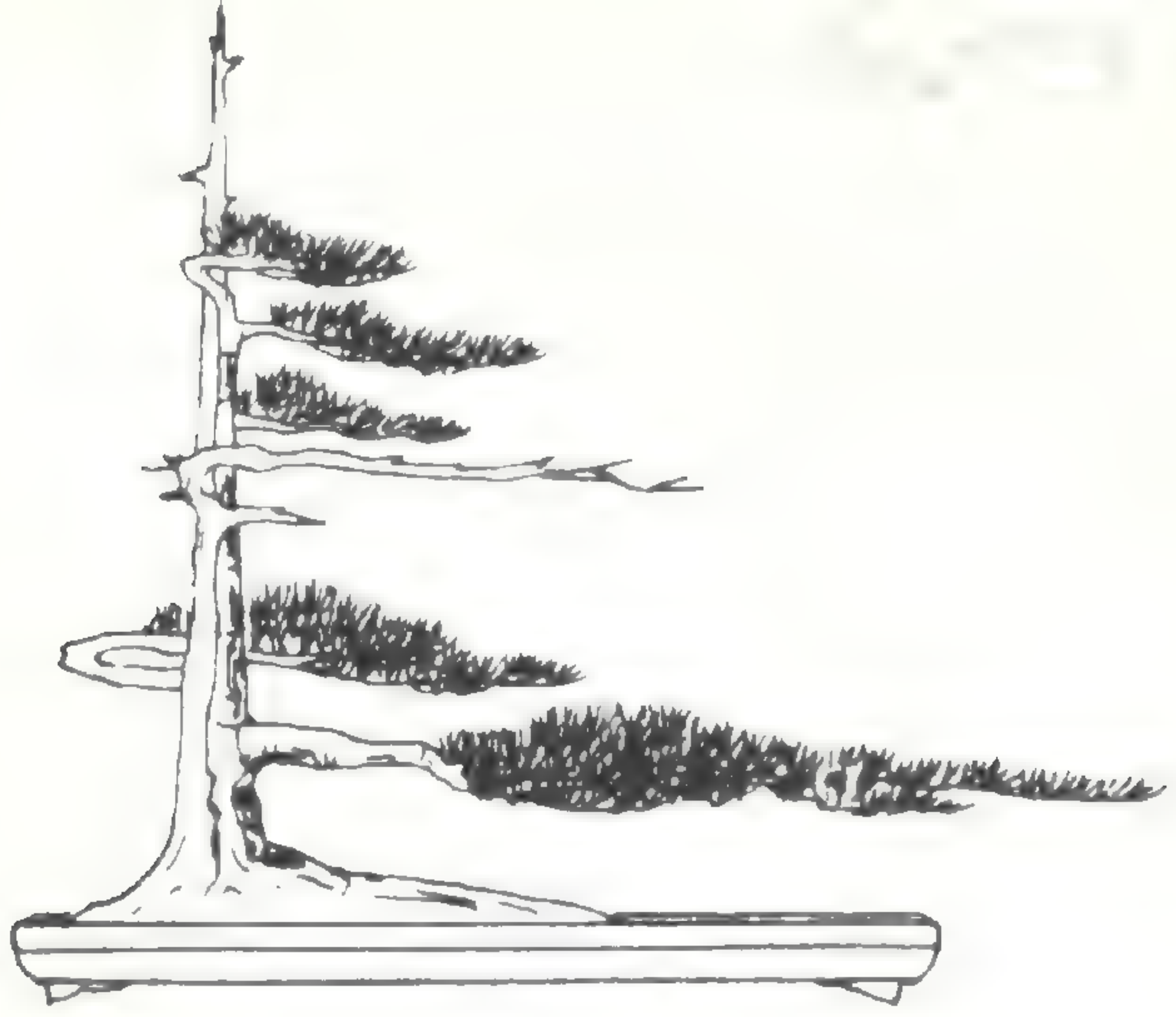

JOHN NAKA, GUEST LECTURER, IS GIANT IN WORLD OF BONSAI

In the miniature world of bonsai, John Yoshio Naka stands tall.

Naka, a recent guest lecturer in the Education Department of the Missouri Botanical Garden, is a recognized authority in the centuries-old Japanese art of bonsai, the art of creating a perfectly-shaped miniature tree.

He is also the author of the text, *Bonsai Techniques;* president and co-founder of the California Bonsai Society, Inc.; and recipient of awards for his work both in this country and in Japan.

Last spring, he brought his science and his art to St. Louis, to share an ancient discipline with the 20th Century friends of the Missouri Botanical Garden.

The principles of bonsai, the secrets of turning a rough and shaggy dwarf tree into an exquisite piece of natural art, include the proper methods of cutting roots, branches, leaves and needles; aging of specimens with the magic of JIN, that "lightning-struck" look so admired; branch bending and mending; and transplanting, soil-changing and fertilization.

Like a magician, Naka can demonstrate the proper methods of shortening a gangly trunk or a scraggly branch, creating a more interesting apex or creating more roots where needed.

He speaks of the bonsai principle of the double trunk:

"A double trunk or twin tree, called AIOI in Japanese, means two trunks or two trees growing from the same or close position. In the pine trees they are often referred to as AIOI-NO-MATSU, or Mr. and Mrs. Pine. Double trunk, or twin trees, are said to be patient and faithful to each other, and will withstand the vicissitudes of nature."

Born in Colorado, Naka returned to Japan with his family when he was eight years old, learning the art of bonsai from his grandfather while still a boy. Returning to this country in 1935, Naka became first a farmer and later a landscape gardener, beginning his collection of bonsai trees in the late 1940s.

As a lecturer, he has traveled coast to coast to teach and conduct workshops for the many bonsai students in the United States. In 1971 and again in 1973, he conducted bonsai tours to Japan.

For his work, Naka has been awarded:

— an honorary citation from the Japanese Minister of Foreign Affairs, Shunichiro Fujiyama;

— an honorary medal from the Japanese Agricultural Affairs Department

— an honorary citation from the County of Los Angeles, Calif.

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October 1976

PAINTINGS OF SCOTT ITTNER, ST. LOUIS ARTIST, ON DISPLAY

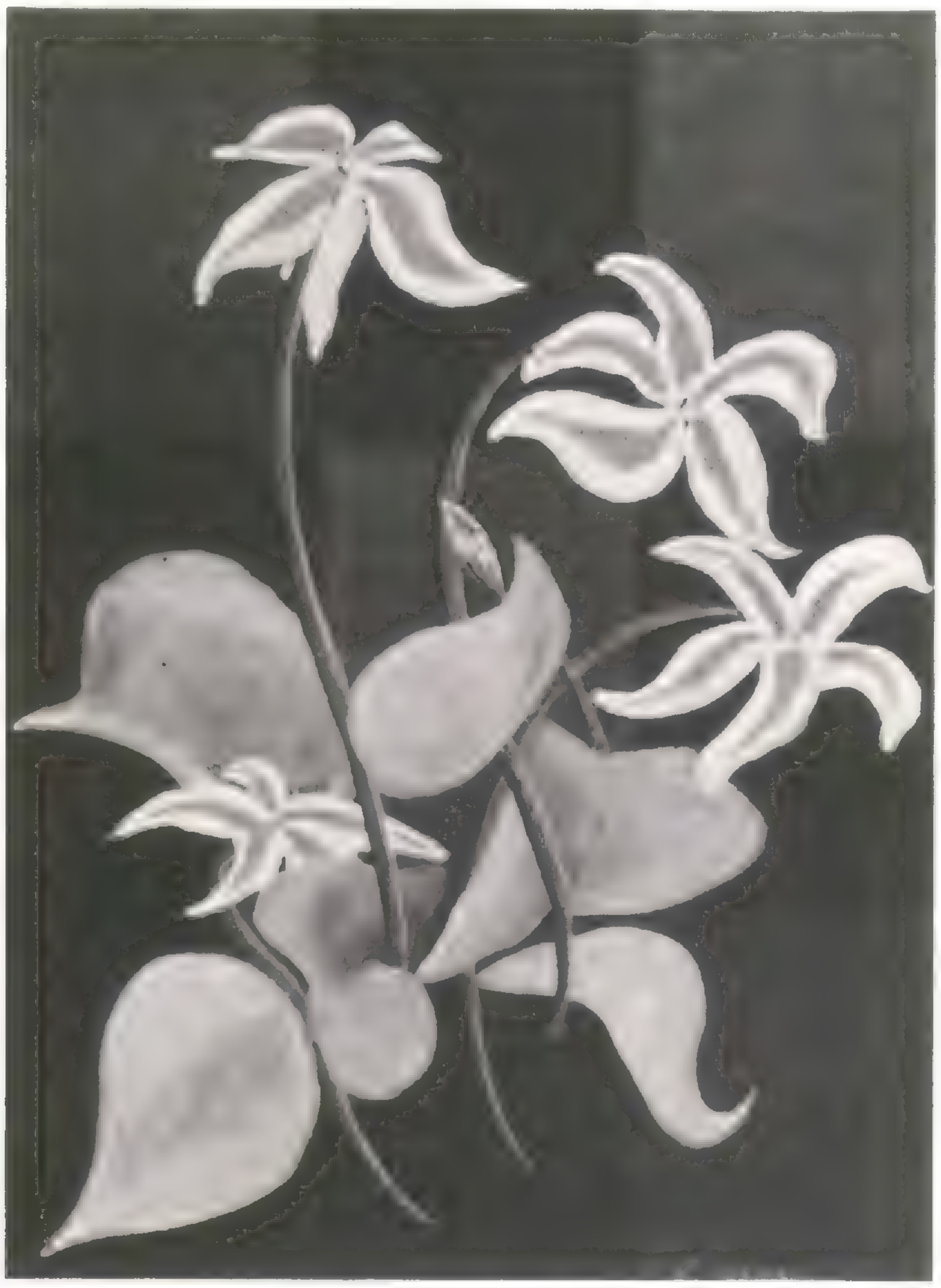
The floral oil paintings of St. Louis' own Scott Ittner — a series nearly nipped in the bud several years ago — will be on display from Oct. 11 until Nov. 5 in the John S. Lehmann Building at the Missouri Botanical Garden.

The Lehmann Building is open to the public from 9 a.m. to 5 p.m., Monday through Friday.

Ittner, who was born in St. Louis and has lived his entire life within a seven-block radius of the Missouri Botanical Garden, did not take up "serious" oil painting until he was 53. But he has been a Garden member since the inception of that organization, and often has found inspiration in things botanical.

While an over-aged freshman in the Washington University School of Fine Arts, Ittner displayed some of his floral paintings for his instructors and classmates — many of the latter one-third his age.

"I could certainly tell," he said, "by their 'knee-jerk reaction', that they considered *flower* paintings to be something done only by 'little old ladies' in their spare time."



Consequently, Ittner did not permit his work to show evidence of his avid botanical interests until after his graduation from art school in 1960.

But since then, his work has earned impressive credentials:

Ittner's paintings have been displayed in group shows regionally as well as in Chicago, New York and London. They were the subject of one-man exhibits at the St. Louis Public Library in 1965, 1966 and 1968, and at the Harmon Galleries in St. Louis County in 1972.

Ittner's paintings hang in 35 private collections in seven states and in Great Britain. The artist is listed in "Artists/USA", "Who's Who in American Art" and the "International Directory of Art."

Slides of some his more characteristic paintings are on file in the library of the St. Louis Art Museum, and may be seen on request during museum hours.

GARDEN GATE SWINGS OPEN TO ADMIT "OZ CHRISTMAS"

The Garden Gate Shop at the Missouri Botanical Garden, traditionally a Christmas shopper's paradise of tree ornaments, holiday knick-knacks and other unique items, will be found this year at the end of the yellow brick road.

"An Oz Christmas" — taken from the land of Oz and the yellow brick road — will be the theme of the shop's annual gift sale this season and of a membership preview party scheduled for Thursday, Nov. 4, on the Garden grounds.

The preview party will be an all-day affair, beginning at 10 a.m. and continuing until 9 p.m. Refreshments will be served.

MEMBERS, "PROSPECTIVE" MEMBERS ATTENDED THE FALL PREVIEW PARTY

Members of the Missouri Botanical Garden again were asked to serve as ambassadors of Garden goodwill, by inviting "prospective members" to be their guests at the membership preview party for the Garden's Fall Flower Show.

The preview party was held from 5 to 7:30 p.m. Friday, Oct. 22, in the Floral Display House on the Garden grounds.

The party, held under the sponsorship of the Direct Mail Corp. of America, featured a prize drawing for the "prospective members" in attendance.

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GARDEN-PUBLIC SCHOOL PROJECT IN ENVIRONMENTAL EDUCATION

Twenty St. Louis schoolteachers ended their summer vacations two weeks early this year and returned to the classroom — on the student side of the blackboard — at the Missouri Botanical Garden.

The teachers are participants in the year-long Environmental Education Training Project, a program co-sponsored by the Garden and the St. Louis Public Schools and supported by a $57,876 developmental grant from the U.S. Office of Environmental Education to the St. Louis Public Schools.

The project — under the co-directorship of Dr. William Klein, the Garden's assistant director, and Edward P. Ortleb, science supervisor for the city schools — is designed to assist teachers in developing environmental education curriculum material and to prepare them to train other teachers.

The project will result in a teacher training model in environmental education.

The summer workshop at the Garden, providing teachers with intensive professional training in the concepts, goals and classroom techniques of environmental education, was the first step in a year-long training project to be conducted by Project Managers Calla Smorodin of the Garden's Ecological Services Department and Peggy Rustige of the St. Louis Public Schools.

During the 1976-77 school year, project teachers in grades four, five and six will develop environmental education mini-units for use in their own classrooms and will conduct workshops and other training sessions for teachers throughout the city school system.

Teachers will attend four one-day workshops at the Garden throughout the school year, focusing on curriculum development, teacher training and evaluation of student comprehension of the concepts and goals of environmental education.

Project Managers Peggy Rustige (left), St. Louis Public Schools, and Calla Smorodin (right) Ecological Services Department.

In addition, project managers will visit classrooms to provide direct, on-site consultation and assistance.

An important feature of the Garden's role in the project is the organization of an inter-institutional ad hoc consortium composed of various St. Louis institutions which have resources to offer educators in environmental education.

The primary function of the consortium is to develop training-model methods of using community resources to provide environmental experiences for school children and to build their understanding of the environment in which they live.

In August, Mr. Ortleb and Dr. Klein chaired the first meeting of the consortium, attended by representatives of more than 25 institutions and organizations of diverse cultural, educational and civic interests.

When the teacher training model has been tested, evaluated and refined, the project managers will compile an Environmental Education Training Guide for use by school systems, state education departments and institutions of higher learning throughout the country.

David Goudy (right), Superintendent of the Arboretum leads project teachers through environmental awareness exercises.

"TO BE A GUIDE IS A PRIVILEGE . . ."

For the past eight years, visitors touring the Missouri Botanical Garden have benefitted from the able assistance of a dedicated corps of specially-trained volunteers.

They are the Guides, an indispensable Garden element, who in 1975 alone escorted more than 18,000 visitors along the footpaths and fountains, the floral displays and indoor exhibits of one of the world's unique botanical institutions.

In doing so, they have performed an invaluable Garden service.

But they have themselves benefitted from a variety of constantly-changing experiences. Among the many comments offered by volunteers in the guide service are these:

— "To be a Guide at the Missouri Botanical Garden is a privilege . . ."

— "What joy it is to have a part in helping young children *discover* the Garden . . ."

A group requesting a Missouri Botanical Garden tour may specify any of several tour programs, ranging from a general overview to specific greenhouse tours, Japanese Garden or English Woodland tours, a session in the Herbarium or one with special focus, like the Missouri Tree Walk.

The groups themselves may be composed of adults, school-aged youngsters, college-level students or vacationing visitors from any part of the world. And the experience of guiding is constantly changing as the seasons change behind the Garden wall.

All of which requires that the Guide know the territory.

Consequently, volunteer Guides are required to complete an eight-week orientation course, attending sessions conducted by the Garden's professional staff and covering all materials needed for the conducting of the various tours.

The sessions deal with a variety of topics, including the history of the Garden, the variety of plants displayed in the greenhouses, the workings of the Herbarium, the concepts involved in and the features of the new Japanese Garden.

Currently, tour requests from school and community groups are increasing so rapidly that an expansion of the Guide corps is necessary. Therefore, a training course will be offered beginning Tuesday, Jan. 4, 1977, from 9:30 a.m. until noon, and continuing each Tuesday thereafter for eight weeks.

Garden tours are conducted each day — Monday through Saturday. Special training times can be arranged for those who are employed and wish to guide on weekends.

Persons interested in joining the volunteer Guide corps, a program of the Garden's Education Department, have been asked to contact Mrs. Mary Edele at 772-7600, extension 54.

Maurita Steuck

MUM WAS THE WORD . . . .

More than 650 friends of the Missouri Botanical Garden attended the recent 1976 Chrysanthemum Ball, donning autumn finery to dance under the stars and drum up support for the Edgar Anderson Memorial Boxwood Garden.

The highly-successful evening, which featured music by the Russ David Orchestra and a fashion show developed by designer Gloria Vanderbilt and Saks Fifth Avenue, was under the direction of Mrs. Walter G. Stern, chairman.

Mr. Sydney M. Shoenberg, Jr.; Gloria Vanderbilt; Mrs. Sydney M. Shoenberg, Jr.

Mrs. Eugene M. Reese (Decorations); Mrs. Don Wolfsberger (Food & Beverage); Mr. Eugene M. Reese

Mrs. George L. Stemmler (Invitations); Mr. George L. Stemmler; Mrs. William M. Klein; Dr. William M. Klein; Mrs. Harry Kessler; Mr. Harry Kessler (Corporate Sponsor); Mrs. Bertram Risch; Mr. Gene McNary; Mrs. Gene McNary, Mr. Bertram Risch.

Mr. Howard F. Baer, Mrs. Jules Campbell; Mrs. Howard Baer; Mr. Jules Campbell

Dr. Peter H. Raven; Mrs. Walter G. Stern

Mrs. and Mr. O. Alexander Kerckhoff (Corporate Sponsors); Mrs. Landon Y. Jones (Decorations); Dr. William Sims

SHAPING UP FOR WINTER

With dry weather conditions continuing and the colder months just over the horizon, it is critical at this time to invest a little work and a lot of moisture to prepare outdoor plants for the winter.

To compensate for lack of rainfall throughout the past growing season, heavy watering is recommended. Foundation plantings must be given a good soaking, so they have a chance to accumulate adequate moisture and to retain it in the soil over the next several months.

Lawns which have had some renovation work would benefit from an additional feeding of a balanced fertilizer, such as 12-12-12. A feeding now will help stimulate grass growing during the cooler weather and will help the lawns become more well established next spring.

Weed control should be abandoned for the time being, to be taken up again with vigor in the spring, when growth is beginning. Lawns should also be cut at regular intervals.

A problem on many roses now is mildew, which should be brought under control by the use of a good fungicide at regular intervals, as long as the roses are growing.

Root feeding of larger trees is recommended any time from mid-November on, to compensate for the lack of nourishment in the plants during the past growing season. Although these plants are becoming dormant, they are still experiencing good root growth and will take in the needed nourishment when leafing out into renewed growth next spring.

Fall bulbs — tulips, daffodils and others — should be planted just before the ground becomes too moist. This will allow the bulbs to become well established before the cold weather sets in. Bulbs for "forcing" indoors should also be started now and should be placed into coldframes where they can have at least eight weeks of cool weather before an attempt is made to force them outdoors. They should be kept moderately moist at all times.

Don't forget to pick up your free daffodil bulbs in the Plant Shop if you have not already done so. Supply is limited.

House plants should be examined thoroughly to ensure that they are free of insects and disease. All plants which have been left outside should be moved indoors immediately, with this being accomplished over a period of several days to guard against shock.

The soil should be checked for insects and, if any are discovered, a dilute solution of a good insecticide should be applied. This should effectively end any insect problems.

For spraying, plants should be placed outdoors in a protected area on a mild day. They should be sprayed thoroughly and allowed to dry before they are returned inside.

The use of fertilizers should be avoided at this time for any indoor plants except the flowering varieties. These plants are becoming dormant and fertilization would stimulate growth and result in plant growth problems.

Vegetable gardens should be thoroughly worked out, with leaf mold or other organic matter added to the soil, along with superphosphate. This should be left rough, ready for planting early in the Spring.

Robert Dingwall
Chief Horticulturist

DROUGHT DIMS BULB SUPPLY

Because of world-wide drought conditons during the past growing season, a shortage of flower bulbs — tulips, daffodils, etc. — is expected to affect the St. Louis area this year.

Gardeners are being encouraged to purchase their bulbs as soon as possible. When the current supply is exhausted, there will be no more bulbs available.

GARDEN STAFF ATTEND SYMPOSIUM ON ENDANGERED AMERICAN PLANTS

Two Garden staff members, Dr. Bill D'Arcy and Dr. Al Gentry, were recently invited to address a Bicentennial symposium sponsored by the New York Botanical Garden.

The symposium, entitled "Threatened and Endangered Species of Plants in the Americas and Their Significance in Ecosystems Today and in the Future," brought together, (by invitation,) botanical experts from most countries of the Americas to assess the hemisphere's present situation.

Dr. D'Arcy discussed the political and economic difficulties in preserving the flora of Central America as the vegetation undergoes rapid destruction at the present time. Dr. Gentry, principal investigator of the Garden's collaborative Flora of Peru project, presented a paper on Endangered Plant Species and Habitats of Ecuador and Amazonian Peru.

The invitation to staff members to participate in this important and timely symposium recognizes both the Garden's expertise in the study of tropical plants and commitment to collaborative efforts to promote the appreciation and preservation of mankind's botanical heritage.

ANGLO-AMERICAN BOTANY: A BICENTENNIAL DISPLAY

A Bicentennial birthday gift from one garden to another — an exhibit entitled "Plants Across the Sea: 400 Years of Anglo-American Botany" — will be on display for the remainder of 1976 in the Administration Building entrance foyer at the Missouri Botanical Garden.

The exhibit is a Bicentennial contribution to the Garden from the Royal Botanic Gardens of Kew, England. It traces contributions made by British and American botanists and horticulturists to the study of American plants and horticultural practices.

The exhibit is open from 9 a.m. to 5 p.m., Monday through Friday.

Mrs. Hilda Eva Schopp Stroh (1891-1976), benefactor

"For the good of his body and the cleansing of his soul, every man should go into a beautiful garden at least once a year."

That quotation, its authorship unknown, was among the favorites of Mrs. Hilda Eva Schopp Stroh, a life-long St. Louisan, lover of music and birds and a special friend of the Missouri Botanical Garden.

Born into a large South St. Louis family, Mrs. Stroh grew up in the Shaw neighborhood and first visited the Missouri Botanical Garden during the tenure of Dr. William Trelease (1889-1912), the director who immediately followed Henry Shaw.

Mrs. Stroh's early visits came in the days when Spring and Fall flower shows were held in large, colorful tents, when the summer months were filled with outdoor displays of huge desert cacti from the Southwest, exotic palms from tropical Africa, giant Victorian waterlilies from the Amazon.

Even after her marriage to Mr. Oscar Stroh in 1940 she remained a Shaw neighbor and constant visitor — taking up residence at 4502 Tower Grove Place, on the corner of Alfred Avenue and directly across from the Garden. Mrs. Stroh lived there, viewing the Garden from her second-story porch, until her death on April 15, 1976.

Beginning in the autumn of 1974, she was able to witness the breathtaking transformation taking place within the Garden walls, the transformation which is even now creating the largest and most beautiful Japanese Garden in North America.

In July, 1975, Mrs. Stroh contributed funds — in honor of her eldest sister, Augusta Schopp Kurtz — for the construction of the beautiful arching redwood bridge, or taikobashi, which connects Teahouse Island with the Japanese Garden "mainland."

Again, later that same year, she contributed the funds required for the building of the Plum Breeze Arbor, or baifutei.

From her second floor porch, Mrs. Stroh was able to see both projects brought to completion before her death. Unfortunately, we can only imagine her pleasure had she been able to see the detail of bamboo, twining wisteria stems, stonework and redwood bark reflected in the total curve of the Garden's barrel circle.

One reasonable imagination, of course, is that such a vista would have reminded Mrs. Stroh of her favorite quotation, which continues:

"Let (every man) sit still in such a garden for an afternoon, and he will come back clear of eye, laughing, contented: at peace with himself and the world. He should let its beauties seep through his pores, its scents sooth his nerves and its vistas refocus his vision."

— *Tamra Raven*

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(Continued from page 7)

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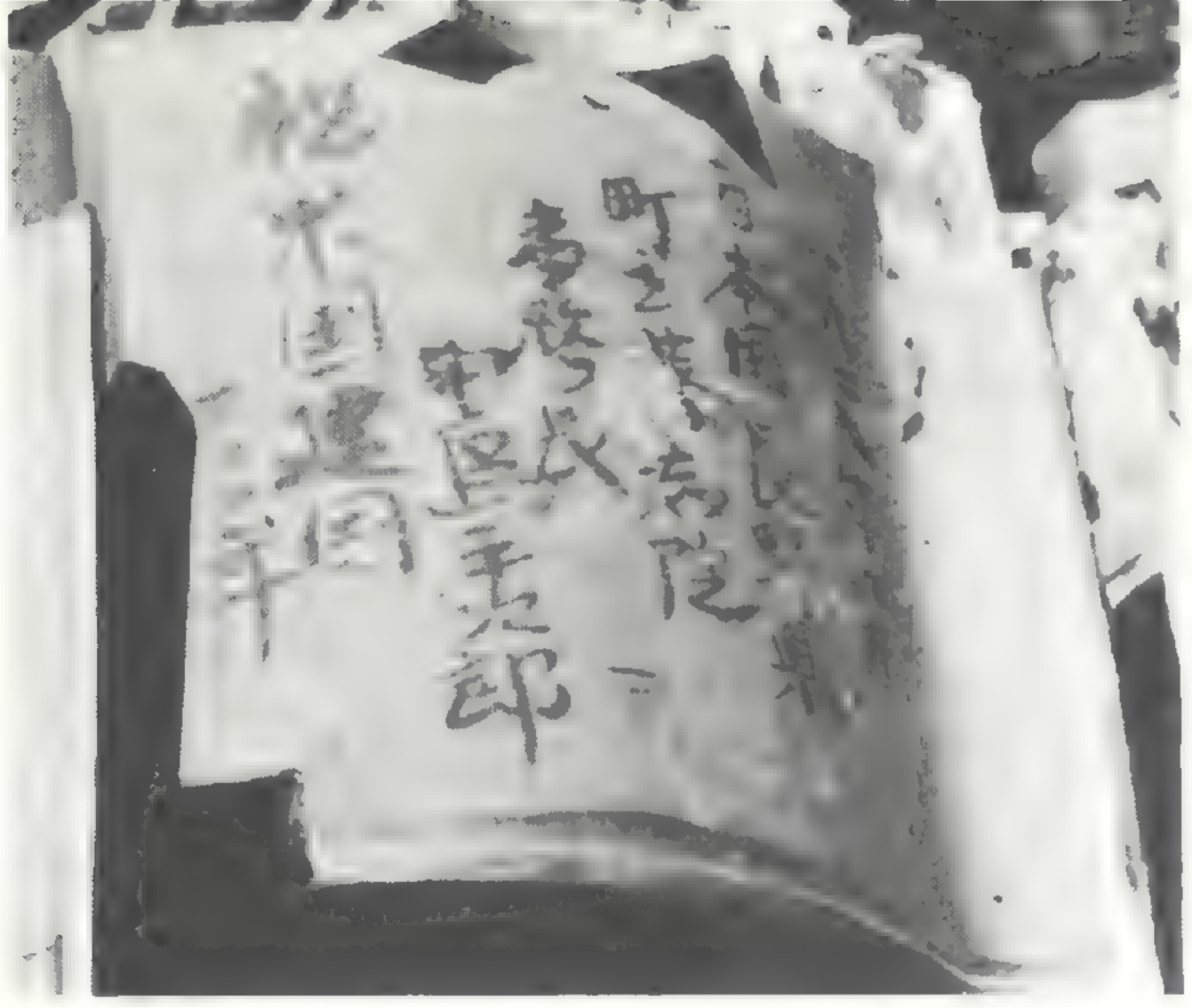
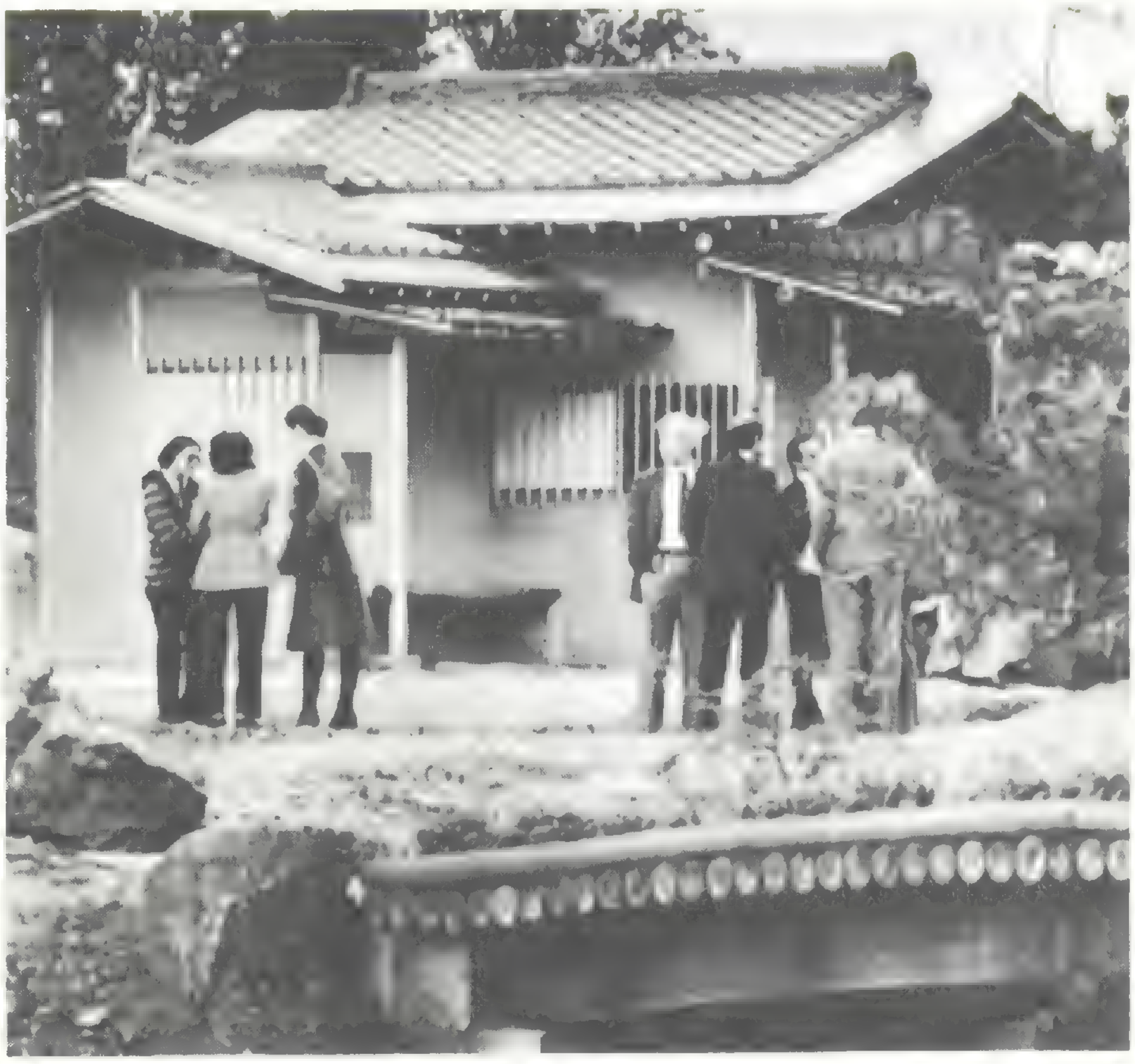


TEAHOUSE GETS WHITE GLOVE TREATMENT AS JAPANESE GARDEN TAKES SHAPE

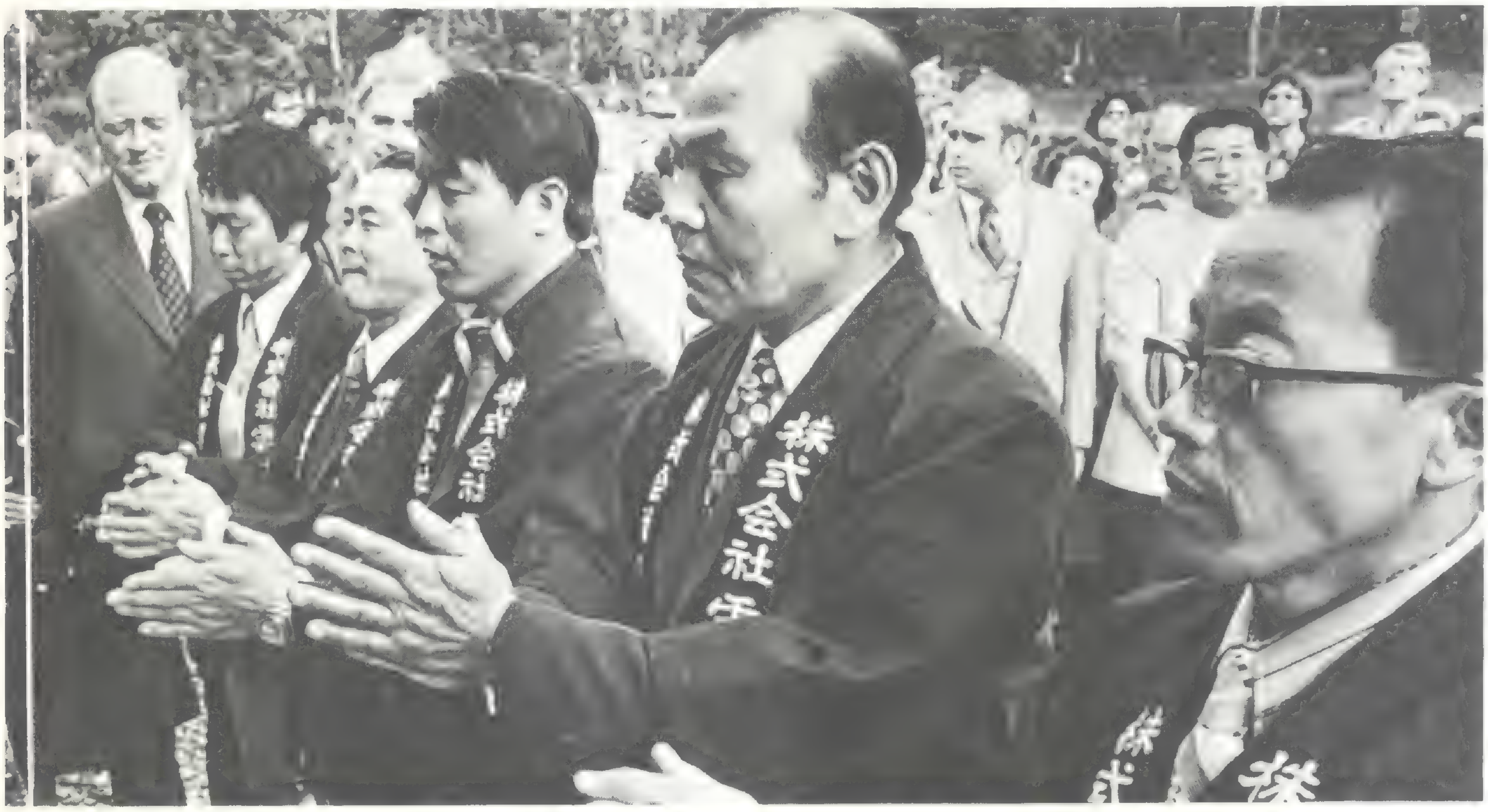


Wearing "hoppi" coats, "chika-tabi" shoes and white knit gloves, seven Japanese master craftsmen labored for seven days in October to give the Missouri Botanical Garden a share in 2,000 years of oriental tradition.

What they built is a simple, yet elegant Japanese teahouse; a wood, bamboo and tile structure that will serve as focal point of the new Japanese Garden, a 12-acre botanical masterpiece and the largest of its kind on the North American continent.

But although the Japanese Garden will not be opened officially until spring, the arrival of the teahouse this fall generated a week-long St. Louis introduction to Japanese culture.

It began on a Wednesday in late September, when a large truck delivered the disassembled teahouse to the Missouri Botanical Garden, a gift to the state of



The Japanese teahouse, above, gift to the State of Missouri from the Nagano Prefecture in Japan, stands completed on Teahouse Island in the new $1.2 million Japanese Garden development. During a week of work, the teahouse was constructed by a group of master craftsmen from Matsumoto City, Japan, who conducted a Shinto ceremony, left, to mark its completion. Roof tiles, top, were inscribed by well-wishers in a traditional Japanese gesture of good fortune.

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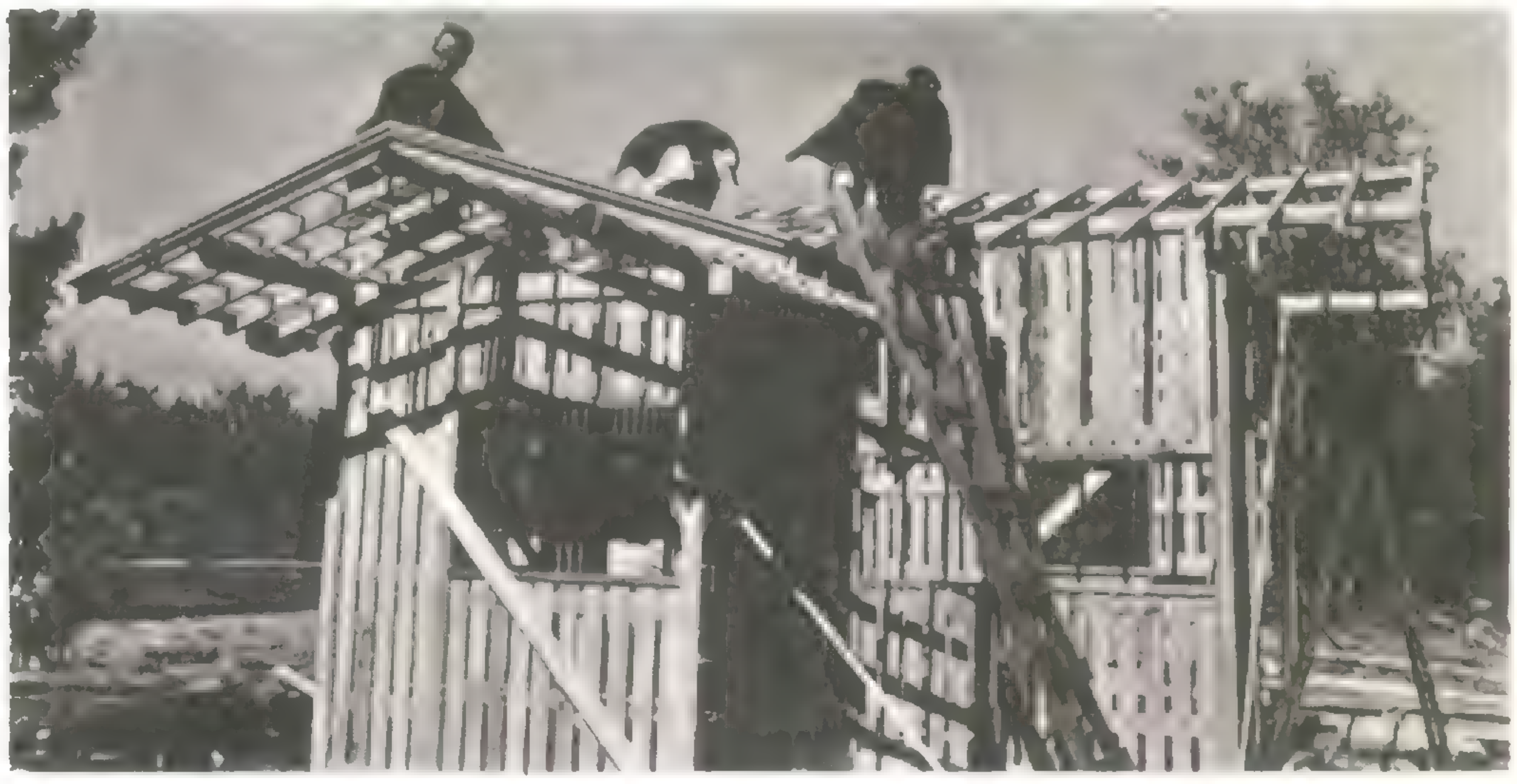
November 1976

The Evolution of a Teahouse

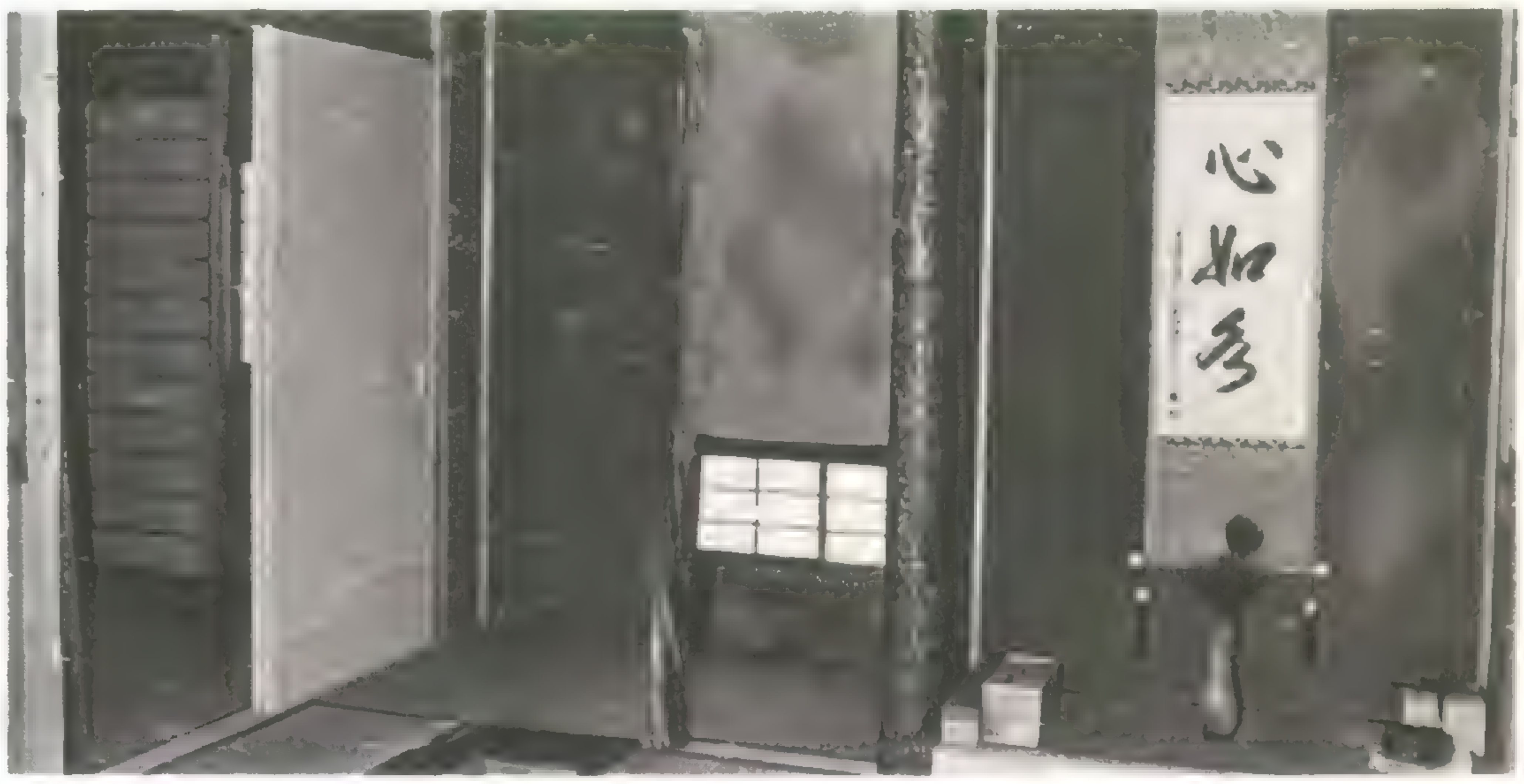
The teahouse arrives, disassembled, by truck; wrapped in paper and tied with ribbon.

Above) The teahouse sections are unloaded. (Below) Dr. Peter H. Raven, Garden director, inscribes a good luck message on roof tile.

The Japanese craftsmen raise the walls and roof supports are attached.



(Above) The teahouse begins to assume the form of a teahouse. (Below) A finished view of the teahouse interior.



Missouri from the Nagano Prefecture, Missouri's sister-state in Japan.

On hand to mark the arrival was Dr. Peter H. Raven, Garden director, along with other Garden officials and representatives of two corporations which had helped bring the teahouse to St. Louis — Sea-Land Service, Inc., which had brought the teahouse overseas from Tokyo, and Burlington Northern, Inc., which had provided overland transport from Seattle, both free of charge.

Wrapped in paper and tied with pink and blue plastic ribbon, the sections of the teahouse were unloaded gently and arranged on the Garden's southwest grounds, to await the arrival of the craftsmen needed to complete the reconstruction.

The teahouse had been erected originally in Matsumoto City, according to ancient Japanese teahouse tradition, but was then disassembled and packaged for its 7,000-mile journey to St. Louis.

Thirty-six hours after that journey ended, seven Japanese master craftsmen arrived from Matsumoto City to begin their work. Under the supervision of Toshitane Hirabayashi, president of the Kumoi Construction Co. of Matsumoto City, the seven men were accompanied from Los Angeles by Dr. Koichi Kawana, architect of the Japanese Garden and professor of environmental design at UCLA.

For the next seven days, amid media attention and visits by state and local dignitaries, the Teahouse Island was a beehive of activity as the craftsmen labored through the weekend and often into the night to complete the reconstruction.

Tom K. Smith Jr., left, president of the Garden Board of Trustees, expresses the Garden's gratitude during Shinto ceremonies held to mark the completion of the teahouse. Other dignitaries include, from left, Dr. Maw Shiu Wang, Monsanto employe and interpreter; Dr. Peter H. Raven, Garden director; Missouri Lt. Gov. William Phelps, and St. Louis Mayor John H. Poelker.

Highlights of the week included:

— a visit by Missouri Gov. Christopher S. Bond, who along with Dr. Raven accepted from Mr. Hirabayashi a Japanese-lettered sign to be placed above the teahouse. Translated, the sign reads "Nagano An" or "small house of Nagano."

— a series of Japanese lunches served to the craftsmen on the job, supplied by the Japanese American Citizens League and including such dishes as sushi (rice seasoned with sugar, vinegar, salt, vegetables and fish or chicken); cherushi (seasoned rice placed in a seaweed roll); radish pickles and chicken terriyaki, along with hot tea or Phillippine beer.

— a banquet hosted by the Japanese American Citizens League, at which each of the Japanese craftsmen received a proclamation of gratitude from the state of Missouri and gifts from the Garden, including miniatures of the Gateway Arch and Bicentennial neckties. Mr. Hirabayashi also received "Misselhorn's Pencil Sketches of St. Louis," famous illustrations by Roscoe Misselhorn.

— the inscription of good luck messages on teahouse roof tiles, which were then set in place to become a permanent part of Missouri Botanical Garden history.

— and an elaborate Shinto ceremony signifying completion of the teahouse, attended by Missouri Lt. Gov. William Phelps and St. Louis Mayor John H. Poelker.

Also in attendance for the 2,000-year-old ritual, part of Japanese culture since the time when Shintoism was the state religion and the Emperor a deity, were Tom K. Smith, president of the Garden Board of Trustees; Dr. Raven; Carl L. A. Beckers, honorary Japanese consul general in St. Louis; Edward Tsugita, president of the Japanese American Citizens League; Paul Maruyama, St. Louis businessman who handled many teahouse arrangements; Mr. Hirabayashi and the master craftsmen; and many friends of the Garden.

One of the craftsmen, who had trained as a Shinto priest, began the ceremony by waving a cut paper bough, symbolic of a tree, in the ancient Shinto ritual of blessing. Other craftsmen in turn blessed the teahouse and teahouse "gifts" — rice, fish, salt, money and sake.

The rice, salt and money were thrown to the crowd in a gesture of good fortune.

Later, another craftsman struck the teahouse three times with a hammer to symbolize that it will stand forever, and sake was poured onto each corner of the teahouse foundation as a purification symbol and one representing longevity.

Finally, the craftsmen, Garden officials and visiting dignitaries sipped sake in toast to the teahouse.

After their week's work in St. Louis, the craftsmen departed for Japan, leaving behind a lasting expression of their national culture and a worthwhile preview of the kind of delicate beauty the Japanese Garden will bring to St. Louis and the Missouri Botanical Garden.

LANTERNS SHED 1904 LIGHT ON JAPANESE GARDEN HISTORY

The Missouri Botanical Garden's new Japanese Garden will serve to shed a patch of light on garden history and St. Louis tradition.

What better way to shed light, of course, than with lanterns?

And therein hangs a tale:

In 1904, the first Japanese Garden in North America was constructed for the Japanese exhibit at the St. Louis World's Fair, bringing a touch of Japan's delicate culture to the American Midwest.

Among the accoutrements of the 1904 garden were two bronze cranes and a pair of ancient Japanese snow-viewing lanterns (Yukimi), which were ultimately purchased from the exhibit by Mr. Leonard Matthews of St. Louis, long-time trustee of the Missouri Botanical Garden.

Mrs. William E. Wiese, Mr. Matthew's granddaughter recalls that the cranes and lanterns were initially placed in her grandfather's garden at 5447 Cabanne place. But before Mr. Matthews' death in 1930, the four historic items were donated to the Missouri Botanical Garden.

The cranes, unfortunately, were stolen.

But the lanterns, carrying a tradition from the first Japanese Garden in North America, will become part of the largest Japanese Garden in North America when the new development is opened to the public next spring.

Ironically, three of Mr. Matthews' grandchildren have come to have special connections with the Missouri Botanical Garden.

— Stratford Lee Morton, whose country place adjoining the Shaw Arboretum, Persimmon Hill, has been donated to The Nature Conservancy for the use of the Garden;

— Dorothea Werner, wife of Trifon von Schrenk, who along with his brother worked for many years with the Garden, particularly in the field of wood preservatives;

— And Mrs. Wiese, currently a Missouri Botanical Garden volunteer guide who is eagerly awaiting the completion of the Japanese Garden and the consequent completion of an historical link with 1904 St. Louis.

POINSETTIA PARTY SET

A Poinsettia Preview Party for members of the Missouri Botanical Garden, preceding the Garden's annual Christmas Flower Show, will be held from 5 to 7:30 p.m. Friday, Dec. 10, in the Floral Display House.

The party will be held under the sponsorship of the Famous-Barr Co.

FLOWER SHOW HAS YULETIDE THEME

"It's Christmas and We Wish You . . ." is the theme of the 1976 Flower Show of the East-Central District, Federated Garden Clubs of Missouri, to be held in the Missouri Botanical Garden's Floral Display House and Headhouse on Saturday and Sunday, Dec. 4 and 5.

The annual flower show in which 155 Missouri garden clubs will participate, will feature 20 classes to be judged, including holiday decorations for the home, and 10 classes in the junior section, for five- to 10-year-olds.

The 20 classes in the Senior Artistic Division will emphasize the Christmas theme in wreathes, tree trimmings, garlands, candles, table and mantle decorations and other Yuletide interpretations. Juniors will exhibit their designs in gift wrapping, ideas for winter sports, storytelling and New Year's posters.

Exhibits submitted for judging will not be for sale, but visitors may browse among the unique ornaments and gifts in a "Yule Shop."

Judging will be held from 10:30 a.m. to 1:30 p.m. on Saturday, Dec. 4. Public viewing hours are 2 to 5 p.m. on Saturday, Dec. 4, and from 9 a.m. to 4 p.m. on Sunday, Dec. 5.

CLIMATRON FEATURES INCREDIBLE EDIBLES

The colorful world of edible tropical fruits — from Mediterranean carob to Indian Gooseberry to African governor's plum — will come to the Missouri Botanical Garden, appropriately, for Thanksgiving week.

The unusual display, featuring edible fruits from the world's Tropics will include such familiar household names as banana, pineapple, grapefruit, orange, lemon, lime and coconut.

But it will also display such exotica as Australian bignay, banyans, Indonesian carambola, South American cassava, New Zealand kiwi, Mexican sapadillo and Peruvian tree tomato.

Visitors to the unique presentation, to be held in the Climatron from Saturday, Nov. 20, through Sunday, Nov. 28, will receive a numbered listing of the tropical fruits and a map identifying their location.

A special exhibit will display samples of the plucked fruit, labeled with botanical names and usage, as well as culinary utensils and condiments from local shops.

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ENGELMANN PORTRAIT RESTORED, RETURNED TO PLACE OF HONOR

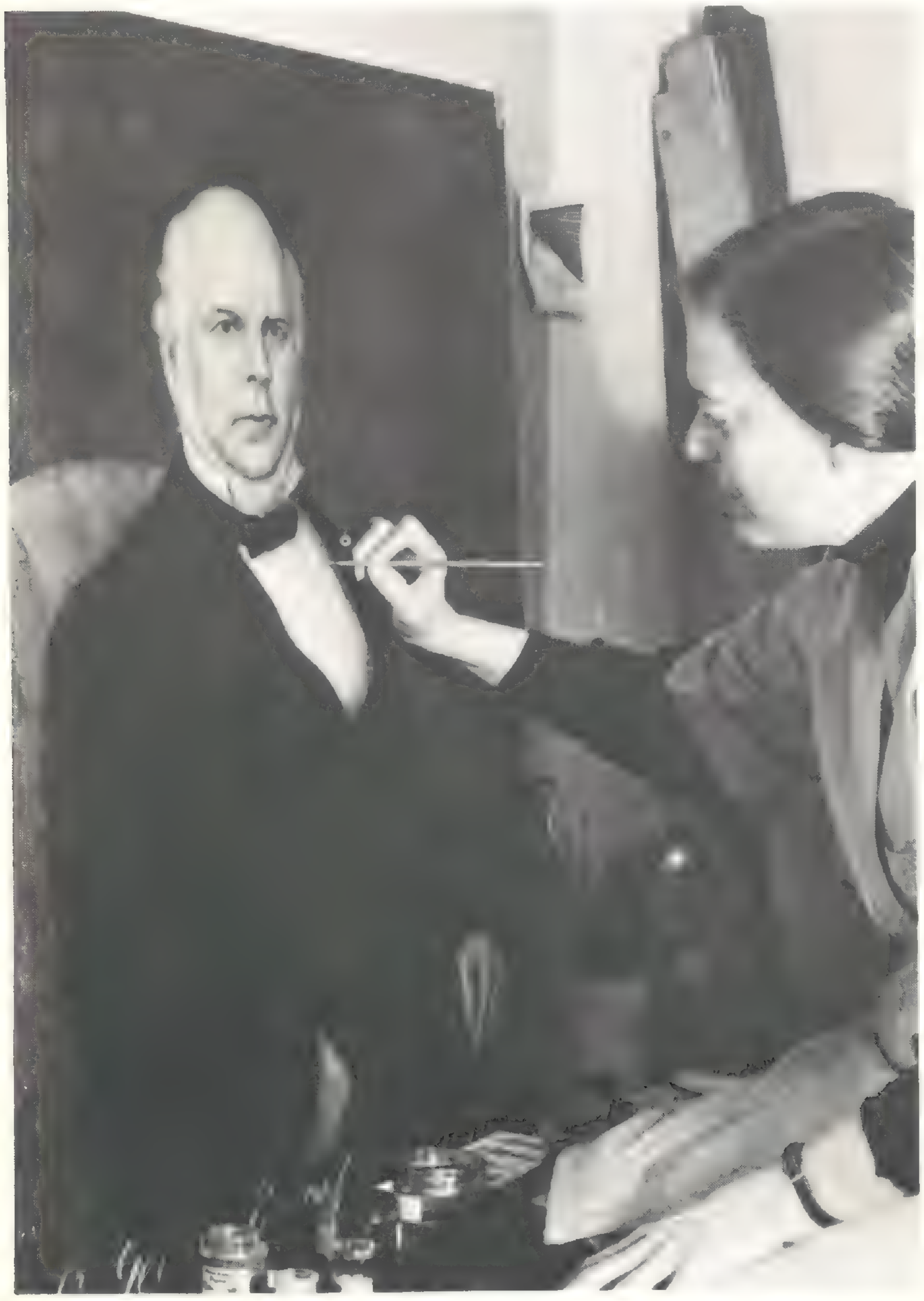
Dr. George Engelmann, pioneer 19th Century botanist and a special friend of the Missouri Botanical Garden, has been restored, revitalized and returned to his place of honor inside the Lehmann Building.

The Garden's oil portrait of Dr. Engelmann, that is.

Restoration work on the portrait was completed by the firm of Kennedy and Stow, which is currently restoring two other Garden portraits — those of 19th Century botanist Asa Gray and ornithologist Alexander Wilson — and has plans to restore 12 others.

Tax deductible donations to support this restoration work are being sought, and those interested in making a contribution have been asked to contact the Garden's director, Dr. Peter H. Raven.

The restoration work involves facing the portrait with layers of Japanese tissue and broadcloth, removal of the highly acidic cardboard backing and a layer of white lead adhesive, cleaning, new lining with linen and "inpainting" — the filling in of paint losses and raising of the lost areas to the level of the original paint surface.



Ellen Kennedy, of the firm of Kennedy and Stow, completes "inpainting" during restoration of the portrait, matching areas of loss to the surrounding paint.

On the portraits reverse side, cardboard backing and layer of lead adhesive are scraped away.

Cynthia Stow raises the level of paint loss to existing level of the painted surface.

Ellen Kennedy attaches aluminum stripping to prevent abrasion between the painting and the rabbet of the frame.

NANCY LAMMERS NAMED TO MEMBERS OFFICE POSITION

The appointment of Nancy Lammers as head of the Members Office and executive secretary of the Executive Board of the Members of the Garden has been announced by Dr. Peter H. Raven, director.

Mrs. Lammers, who has been a member of the Garden staff since July, served as coordinator of Special Events until moving into her new position. She will now be responsible for all membership activities and the coordinating of special events in the Garden.

Formerly from Circleville, Ohio, Mrs. Lammers was graduated from Stephens College, Columbia, Mo., in 1972 and has had wide experience in coordinating retailing programs, merchandising, and customer relations, particularly in the furniture market in Wisconsin and Illinois.

She is married to Charles Lammers, National Sales Manager for Modern Craft, a Division of Lee-Rowan Company. They reside in Kirkwood.

1869 PLAT, GARDEN SKETCH UNEARTHED IN OFFICE MOVE

The St. Paul Title Insurance Corp., during an otherwise-routine move from one office to another, has uncovered a unique historical document relating to the Missouri Botanical Garden.

The document, an 1869 auction plat drawing of a section of South St. Louis, was presented to the Garden recently by Wayne Gollub, St. Louis branch manager for St. Paul.

Dr. William M. Klein, assistant director of the Missouri Botanical Garden, accepted the plat in behalf of the Garden.

One of several historic plat drawings discovered during the corporation's move, the Garden document is an intricate yet delightful rendering of the "Fairmont" suburban villa development on the South Side and the adjacent "Henry Shaw's Botanical Garden."

FAIRMONT
SUBURBAN VILLA

Although fine hand lettering and period graphics emphasize the 1869 property auction, the Garden area is minutely laid out to include visitors wandering through the pathways outside the formal Garden area. Other interesting details include a whimsical locomotive chugging along "New Manchester Road" and the setting of St. Louis' city limits just west of Grand avenue.

Expertly restored by Kendara Deerenee Lovette, the Garden's conservator, the framed plat has been placed in the lobby of the John S. Lehmann Building on the Garden grounds.

Ms. Lovette, along with the professional and volunteer staff of the Bindery and Conservation Department, has the responsibility of preservation work on the Garden's vast collection of books, manuscripts, maps and photographs.

Ms. Lovette also oversees the conservation of the Garden's collection of sculpture and representational art.

FOLLOW THE YELLOW BRICK ROAD . . .

Dorothy and her three classic campanions, the Tinman, the Scarecrow and the Cowardly Lion, were on hand this year for an "Oz Preview," the Garden Gate Shop's salute to the season and the fantasy world of "The Wizard of Oz."

To establish the theme, the shop's Christmas sale features many tree ornaments, toys and holiday decorations in the "Oz" motif, as well as its traditional array of unique holiday gift items — jewelry, stocking stuffers, placemats, stationery, garden accessories and garden and plant books.

PLANT SALE IS BEST IN GARDEN HISTORY

More than 5,000 plant lovers jammed the grounds of the Missouri Botanical Garden for the October plant sale, basking in the carnival atmosphere and purchasing take-home plants shipped in from as far away as Europe and South America.

Visitors to the three-day plant-a-thon were entertained by the New Greenland Plant Band, which donated its appearance, while more than 2,000 children enjoyed the stories told by Joanie Duggins, the Garden's "butterfly," and the thousands of balloons and lollipops contributed by the Famous-Barr Co.

Purchased during the sale, held Oct. 2-4, were more than 300 different species of houseplants and at least 25 different cacti genus, with plant care information provided as a bonus.

The Garden's fourth plant sale, by far its most successful, was planned and coordinated by Plant Shop volunteers, under the supervision of sale consultants Mrs. Paul Bakewell Jr., Mrs. B. B. Culver Jr., Mrs. William H. Harrison and Ms. Josephine M. Christian.

For the Garden staff, sale arrangements were handled by Randal Anderson, manager of Horticultural Services, and Jamie Weldon, Plant Shop manager.

During the sale, the Garden Members Office conducted a prize drawing and presented Chinese Fan Palms to three winners — Dorothy Kendrick of St. Louis, Lorraine Cole of House Springs and Carolyn S. Meyer of Florissant. None of the winners was a member at the time of the drawing, but 30 new memberships were submitted during the sale.

During the Garden's highly successful Plant Sale, shoppers in the Plant Shop line up to purchase plants, plant aids, potting soil and pots. Jamie Weldon, Plant Shop manager, directs the activity from behind the counter.

The New Greenland Plant Band, purveyors of sounds designed to please plants as well as people, contributed musical services to the three-day sale.

GARDEN WORK

With the advent of cooler weather, very little time remains to complete final fall garden preparations. Now is the time to clean up the vegetable garden, dig it over and, if possible, work plenty of organic matter into the soil. Areas for early planting should be given a good mulch of 10 to 12 inches of leaf mold or other suitable material, to keep the frost from penetrating too deeply. Superphosphate at the level of three to four pounds per 100 square feet can also be worked in now, so that in February the ground will need merely to have the mulch removed and raked over and the first seed planted.

TREES AND SHRUBS

This is the ideal time to plant trees and shrubs. Many of these were dug in late October or earlier this month and, with proper soil preparations, they can be planted as long as the ground remains unfrozen. All new plantings should be heavily mulched, placed four to five inches around them and extending one to 1½ feet beyond the actual planting area. This helps to conserve moisture and allows the plant to continue making good root growth.

Fall feeding of trees is recommended from November on. Drill holes 14 to 15 inches deep, going a third of the way from the drip line to the base of the tree. Place a handful of balanced fertilizer in each hole space at 18-inch intervals. Newly-planted stock should be lightly pruned to remove damaged wood and thick branches, and to help offset the loss of some root growth. Be careful not to remove the main leader on trees or they may tend to dwarf.

OTHER PREPARATIONS

New plants should be staked carefully to prevent wind damage during the winter months.

Lawns should be mowed as long as there is active growth, so that the grass is not long when the winter season arrives. Leaves and other debris should be raked from the grass to prevent matting and drying out of the lawn.

Compost piles should be built up very carefully, a layer of coarse material alternating with a layer of fine material. Each layer should be wetted thoroughly to insure a good breakdown. The addition of old organic matter will hasten decay.

The rose garden should be cleaned thoroughly and if healing has not commenced, this should be done before the cooler weather sets in. Bring in topsoil mixed with equal amounts of good organic matter from another area. Place the mixture around the base of each rose to a depth of 10 to 12 inches. Once winter begins, additional mulch with two to three inches of wood chips is advisable. No rose pruning is necessary, other than to remove long canes which might break during the winter months. Roses withstand the elements better if they are not pruned in the fall. Pruning should be delayed until early April.

House plants should be examined for insects and disease. Spray as needed with the spray recommended for the specific insect. Avoid over-watering and feeding this time of year. Very little fertilizer is needed unless the plants are making active growth or are flowering plants.

The repotting of plants and heavy pruning can be done now if needed. Plants will then be ready for good growth when the days start to lengthen.

Outside, water areas around foundation plantings and under roof overhangs, to insure a deep watering before the ground freezes. This will help to protect the plants and keep them in good condition over the winter months. Good mulch around these areas is also beneficial.

— Robert J. Dingwall
Chief Horticulturist

EARLY BLOOMERS: NOT ALL "IMPORTS"

Most plants blooming hereabouts in the early spring had to be "Imports," Edgar Anderson used to say, because the native flora had endured centuries of experience with the St. Louis climate and was too smart to take chances with its vagaries.

This year, Edgar Anderson would have been very much surprised.

In the spring of 1976, a number of the natives shed their customary caution and, perhaps with some mystical prescience that this year a lamb-like early March did NOT forbode a lion-like ending for that month, ventured into bloom at least two weeks prior to their earliest appearance in previous records.

In keeping track of the "blooming lists" of a group of avid wildflower buffs, on weekly one-day excursions from the city, much of our previous dating has been "boulverse," and a number of new notations scribbled into that bible of local botanists, Steyermark's *Flora of Missouri.* Nomenclature and common names according to Steyermark, Julian A. 1972. *Flora of Missouri.* Iowa State University Press, Ames, Iowa.

The following species, April debutantes in other seasons, all bloomed this year prior to the first of that month.

Acer negundo L. — Box Elder.
Antennaria plantaginifolia (L.) Hook. — Pussy's Toes.
Arabis laevigata (Muhl.) Poir. var. *laevigata* — Smooth Rock Cress.
Camassia scilloides (Raf.) Cory — Wild Hyacinth.
Castilleja coccinea (L.) Spreng. — Indian Paintbrush.

Chaerophyllum procumbens (L.) Crantz — Wild Chervil.
Clematis fremontii S. Wats. var. *riehlii* Erickson — Fremont's Leather Flower.
Cornus florida L. — Flowering Dogwood.
Delphinium tricorne Michx. f. *tricorne* — Dwarf Larkspur.
Hybanthus concolor (T. F. Forst.) Spreng. — Green Violet.
Ostrya virginiana (Mill.) K. Koch — Hop Hornbeam.
Phlox divaricata L. var. *laphamii* Wood — Blue Phlox.
Prunus americana Marsh. — Wild Plum.
Pyrus ioensis (Wood) Bailey — Wild Crab.
Ribes missouriensis Nutt. — Missouri Gooseberry.
Sassafras albidum (Nutt.) Nees — Sassafras.
Senecio obovatus Muhl. — Squaw-weed.
Staphylea trifolia L. — American Bladder-nut.
Trillium recurvatum Beck. — Purple Trillium.
T. viride Beck. var. *viride* — Green Trillium.
Uvularia grandiflora Sm. — Bellwort.
Viola pedata L. — Pansy Violet.
V. striata Ait. — Pale Violet.

— Erna Rice Eisendrath

TOWER GROVE HOUSE IN GOOD HANDS AS CHRISTMAS SEASON APPROACHES

Tower Grove House, Henry Shaw's elegant country residence and currently one of the finest examples of Victorian architecture and furnishings in America, will be in the expert hands of decorators of all ages as it is prepared for the 1976 holiday season.

The residence, on the grounds of the Missouri Botanical Garden at 2101 Tower Grove Ave., will be closed on Monday, December 13, to allow the decorating committee to make Christmas preparations.

But from Tuesday, December 14, until Monday, January 3, the decorated mansion will be open to offer the public the unique experience of a Victorian Christmas.

For the 1976 holiday season, fifth-grade students from two St. Louis area schools will participate in the decorating activities. The students, from Mary Institute and Community School, will plan, create and execute the decorations for two of the bedrooms and the small sitting room on the home's second floor.

Other trimming duties will be as follows:

— Mr. Shaw's bedroom, by the Garden Club of St. Louis;

— The guest bedroom, by the volunteer tour guides;

— The area at the top of the stairs and the upstairs hall, by the "hostesses of the day;"

— The twin parlors on the first floor, by The Sowing Circle Garden Club;

— The staircase, hall and Mr. Shaw's office, by the Women's Board of the Missouri Botanical Garden, with Mrs. Dwight Coultas as chairman of the committee;

— The kitchen, by the Herb Society;

— The dining room and library, by Mrs. Neal S. Wood;

— To give the house exterior the Christmas touch, the children of the Garden's assistant director, Dr. William M. Klein, have been chosen to trim the Bird Tree.

In addition to tours of Tower Grove House, a collection of attractive Christmas ornaments will be on sale during the holiday season.

— Alice Lynch, manager
Tower Grove House

Dr. Peter H. Raven, left, Garden director, accepts "Flying Colors '76", an Alexander Calder lithograph signed by the author, from Dick Barbeau, representing the employes of Braniff International Airways. Donald W. Bigbie, center, is district sales director for Braniff. The lithograph was a gift to the Garden from Braniff employes.

Two companies provided transportation services without charge to bring the Japanese teahouse to the Garden. On hand for its arrival are, from left, Daniel T. O'Brien, sales manager, International Trade, Burlington Northern, Inc.; Richard McGee, aide to Mayor John H. Poelker; Gerald M. Brown, district sales manager, Sea-Land Service, Inc.; and Dr. Peter H. Raven, Garden director.

STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION (ACT OF AUGUST 12, 1970: SECTION 3685, TITLE 39, UNITED STATES CODE.)

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8. Known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities: None
9. The purpose, function and nonprofit status of this organization and the exempt status for Federal income tax purposes has not changed during preceding 12 months. Authorized to mail at special rates (Section 132.122, PSM)
10. Extent and nature of circulation

		Average no. copies each issue during preceding 12 months	Actual no. copies of single issue published nearest to filing date
A.	Total no. copies printed (Net Press Run)	10,000	10,000
B.	Paid Circulation		
	1 Sales through dealers and carriers, street vendors and counter sales	none	none
	2 Mail subscriptions	8,800	8,800
C.	Total paid circulation	8,800	8,800
D.	Free distribution by mail, carrier or other means samples, complimentary and other free copies	500	500
E.	Total distribution	9,300	9,300
F.	Copies not distributed		
	1. Office use, left-over, unaccounted, spoiled after printing	700	700
	2. Returns from news agents	none	none
G.	Total (Sum of E & F — should equal net press run shown in A)	10,000	10,000

I certify that the statement made by me above is correct and complete

(Signed) Marilee C. Martin, Manager
Public Relations Department

MISS NELL C. HORNER (1889-1976) GARDEN LIBRARIAN

Miss Nell C. Horner, Missouri Botanical Garden librarian and editor of publications for nearly 40 years, died following a brief illness on Monday, Sept. 6, 1976, at St. Luke's Hospital in St. Louis.

She was 87.

Miss Horner, a University City resident at the time of her death, was a Columbia, Mo., native, who came to St. Louis in the 1900s to attend Washington University.

In 1912, she became librarian and editor of publications at the Missouri Botanical Garden, serving in those positions until she was hired in the 1950s to work in the medical library of the St. Louis University School of Medicine. She retired in 1960.

Private graveside services were held in Columbia, Mo.

Friends of Miss Horner may make donations in her memory to the Missouri Botanical Garden or to the charity of their choice, according to a family spokesman.

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In Honor of Mr./Mrs. Morton Meyer's Golden Anniversary
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MISSOURI BOTANICAL GARDEN BULLETIN
2345 Tower Grove Avenue
Saint Louis, Missouri 63110

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Missouri Botanical Garden Bulletin

DECORATORS READY TO DECK THE HALLS FOR HOLIDAYS AT TOWER GROVE HOUSE

A Victorian Christmas experience, "Mr. Shaw Entertains the Children of St. Louis," will be offered for the 1976 holiday season at Tower Grove House, Henry Shaw's 19th Century country home at the Missouri Botanical Garden.

Open to the public from Dec. 14 through Jan. 4, the historic home will be decorated almost "from tower to grove" in holiday tradition, with many ornaments and decorations designed and made by children.

Fifth-grade students from Mary Institute and Community school will decorate the parlors on the first floor of Tower Grove house. And decoration of the Bird Tree, outside the home, will be in the hands of Jennifer,

(Continued on Page 2)

SOMETHING FOR THE BIRDS . . .

One of the most unique elements of the Tower Grove House holiday project is the Bird Tree, a seasonal "feeder" hung with edible ornaments as a Christmas gift to the Missouri Botanical Garden's birds-in-residence.

The bird baubles, including popcorn, cranberry strings, orange rinds and suet cakes, will be made this year by the children of Dr. and Mrs. William M. Klein.

For those interested in trimming their own Bird Tree, Edith Mason, landscape architect and the Garden's Bird Tree decorator for many years, offers the following directions:

For suet cakes, use 20-25 pounds of suet ground by a butcher, if possible, because suet requires a lengthy time for rendering. Melt the suet in a large iron pot or

(Continued on Page 2)

Erica Klein, top, daughter of Dr. and Mrs. William M. Klein, gives Bird Tree its holiday trimming. Dr. Klein is the Garden's assistant director. Erica and her brother and sisters, left, Darin, Jennifer and Melissa Klein, use teamwork to give the birds a holiday treat.

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DECKING THE (SHAW) HALLS . . .

(Continued from Page 1)

Melissa, Erica and Darin Klein, children of Dr. and Mrs. William M. Klein.

Dr. Klein is assistant director of the Garden.

Also involved in transforming Tower Grove House into a Victorian Christmas delight are the Volunteers and Hostesses, who will decorate the guest room and the upstairs hall; several garden clubs, including the Sowing Circle Garden Club, the Garden Club of St. Louis and the Ladue Garden Club, who will ornament areas throughout the house; the Herb Society, in charge of the Shaw kitchen; and the Women's Board of Missouri Botanical Garden, who will decorate the staircase and hall.

Tower Grove House will be closed, to be given its holiday trim, on Monday, Dec. 13. The next day, it will open to the public.

Admission to the decorated residence will be free with a minimum $6 purchase from the collection of handmade Christmas ornaments made for the occasion.

LAND OF OZ AT THE GARDEN GATE SHOP

From somewhere over the rainbow, at the Members Preview of the Garden Gate Shop Christmas sale, came the Tin Woodman (Mrs. John Lipscomb), the Cowardly Lion (Mrs. Edwin S. Baldwin), Dorothy (Mrs. Holland F. Chalfant, Jr.), and the Scarecrow (Mrs. William A. Sims, Jr.). All characters are volunteer buyers for the Garden Gate Shop, which this year is featuring gifts, ornaments, and toys from the Land of Oz.

Garden Gate Sh

SOMETHING FOR THE BIRDS . . .

(Continued from Page 1)

heavy skillet, and mix in various bird foods, with chopped dates and raisins.

Pour the mixture into aluminum gelatin molds of holiday shapes — stars, crescents, rings, etc. While hot, insert foot-long pipe stems for handles, preferably in red or green to add holiday color. When cool, place the ornaments into the freezer until ready to unmold and hang on the tree.

Cranberries and popcorn can be strung using string and a tapestry needle. In the same way, dried apples and orange rinds can be strung on yarn, or orange rinds can be made into baskets filled with dried bread crumbs.

Last Christmas, members of the Marshalltown (Iowa) Bird Club visited the Garden and were so impressed with the Bird Tree that the club president later wrote to request instructions for trimming a tree for Marshalltown birds this coming holiday season.

GIFT-WISE, PLANT SHOP HAS A BETTER IDEA

Until the last shopping day before Christmas, the Plant Shop at the Missouri Botanical Garden will offer weekly holiday specials for those interested in putting a little life into their shopping lists.

Beginning each Wednesday, the Plant Shop will offer special savings on a variety of selected plants and plant items, according to James Weldon, shop manager. The specials will continue until noon on Dec. 24, when the Garden will close for Christmas.

The Plant Shop will be decorated for the season with an abundance of flowering specimens, also available for purchase. A feature attraction will be a tree decorated with "natural" ornaments, gathered from the Garden and from the Shaw Arboretum.

PASTICCIO, IF YOU PLEASE

The theme of the Missouri Botanical Garden's 1976 Poinsettia Preview Party, scheduled for 5 to 7:30 p.m. Friday, Dec. 10 in the Floral Display House, can be embodied in a single, expressive word:

"Pasticcio"!

The term, of Italian origin, refers to a delightful miscellany, a medley of unexpected and amusing happenings. In charge of planning and producing "Pasticcio" are Mrs. George K. Hasegawa, committee chairman, assisted by committee members Mrs. Shadrach F. Morris, Mrs. W. Boardman Jones and Mrs. J. Butler Bushyhead.

Sponsored by the Famous-Barr Co., the party will feature refreshments, including complimentary wine punch, and the informal modeling of holiday fashions.

GARDEN FEDERATION TO HOLD GALA HOLIDAY FLOWER SHOW

For the first time in four years, the East-Central District, Federated Garden Clubs of Missouri, will hold a major flower show at the Missouri Botanical Garden. The event is scheduled for Dec. 4 and 5 in the Floral Display House.

The East-Central District is composed of 155 garden clubs in St. Louis and St. Louis County, representing more than 3,500 members.

"It's Christmas and We Wish You . . ." is the theme of the show, which will feature educational exhibits, a slide program, a Brownie troop Christmas exhibit, Senior and Junior Artistic and Horticultural divisions, and a Yule Shop for the sale of ornaments and gift items.

Candlelight reflected on a silver screen, an Art Decco interpretation with handcrafted candles and flowers, was designed by Mrs. John L. O'Brien. "Candlelight" is among the Christmas wishes of the East-Central District, Federated Garden Clubs of Missouri, Flower Show.

Educational exhibits will include Art with Cones and Pods; Presidential Legacies for Future Horizons; and Simplified Care with Wick Watering, for African Violets.

Public viewing hours are from 2 p.m. to 5 p.m. on Saturday, Dec. 4, and 9 a.m. to 4 p.m. on Sunday, Dec. 5. There is no charge other than gate admission to see the Flower Show.

The slide program will be shown at 3 p.m. on Dec. 4, and at 11 a.m. and 2 p.m. on Dec. 5. Brownie Troop 2944 from St. Sebastian School, sponsored by the Hathaway Garden Club, will provide a seasonal exhibit entitled "Christmas Weeds 'N Things."

There will be 20 classes for entries in the Senior Artistic Division, including: A Wreath of Happiness Around You; Gaily Trimmed Trees; Glowing Hearths; Happy Hang-ups; Friendly Calls; Family Gatherings; Carol Singing; Candlelight; Love and Kisses; Hearty Welcome.

A Bit of Whimsy; Happy Memories; Gala Evening; Moments of Reverence; Peppermint Sticks and Candy Canes; Pretty Gifts; Snowflakes; Favorite Things; Some Ho-Ho-Hoing; And a Happy New Year.

In the Senior Horticulture Division, Section "A" includes Arboreal Specimens — Conifer/needled Evergreens, Broadleaf Evergreens and Berried Branches. Section "B" includes House Plants (both single and multiple plantings), and Hanging Plants. Section "C" is for Dried or Preserved Plant Materials.

In the Junior Artistic Division, for five to 10-year-olds, 10 classes of entry are available, including: Happy Wrapping; A Tree-Trimming Party; Carols to Sing; Some Snow for Sledding; Reindeer on the Roof; The Joy of Toys; Fun and Games; Time for Legends; Could Hear the Animals Talk; And a Colorful New Year.

In the Junior Horticulture Division, Section "A" includes Cacti and Succulents, House Plants and Plants propagated by the exhibitor; Section "B" will include Aquariums, Dish Gardens, Terrariums and Feeding and/or Watering Boards for Birds. The Flower Show offers all viewers an excellent way to pick up holiday decorating ideas.

In charge of arrangments for the Flower Show are, from left, Mrs. John A. Secrist, district director of the East-Central District; assisted by Mrs. William V. Donnan, schedule chairman; and Mrs. Tracy Shade and Mrs. Robert E. Hannon, general co-chairmen.

HAIL AND FAREWELL!

Life Membership in the Missouri Botanical Garden, for 40 years a special category for some very special Garden friends, will cease to be available as a membership alternative beginning in 1977.

Since its establishment in 1936, the Life Membership has given the Garden a small but loyal group of friends who wished to share in the Garden's progress by contributing generously to its financial support and giving encouraging impetus to its growth.

However, recognizing the critical role which gifts play in the Garden's continued progress, and facing the realities of inflation and its attendant problems, the decision was made to discontinue the Life Membership category.

The Garden's cherished Life Members, of course, will always remain Life Members. They will be honored with a specially designed scroll, inscribed with their names, which will hang in the Members' Lounge of Henry Shaw's Townhouse (the Administration Building).

It is with great pride, pleasure and heartfelt gratitude for their loyal support, that the Missouri Botanical Garden acknowledges its Life Members:

LIFE MEMBERS

Mr. Lester M. Abbott
Mr. & Mrs. Howard F. Baer
Mrs. Kenneth C. Baker
Mr. & Mrs. Edward L. Bakewell, Jr.
Mrs. Charles E. Bascom
Miss Nina K. Bernd
*Mrs. Marion C. Blossom
Mrs. Fred J. Blum
Mr. & Mrs. Herman Bowmar
Mr. Arthur M. Branch, Jr.
Mrs. R. I. Brumbaugh
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Mrs. Charles S. Drew
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Mr. Leicester Busch Faust
Mr. & Mrs. Macquorn R. Forrester
*Mr. Dudley French
Mr. & Mrs. Stanley J. Goodman
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Mr. James W. Haegen
Mrs. Ellis H. Hamel
Mr. & Mrs. Whitney R. Harris
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Miss Harriet Tatman
Miss Sylvia Walden
Mrs. Jacob Wallach
Mrs. Horton Watkins
Mr. & Mrs. Ben H. Wells
Mrs. Ann M. Wendell
Mrs. Eugene F. Zimmerman

*Deceased

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GARDEN VISITORS: From Many Miles Around. . .

Mr. Hiromu Fukada, center, Minister of Economic Affairs for the Japanese Embassy in Washington, D.C., is given a motorized tour of the new Japanese Garden development by Dr. Peter H. Raven, right, Garden director, and Carl L. A. Beckers, honorary consul general for Japan in St. Louis. A luncheon in the John S. Lehmann Building followed Mr. Fukada's inspection tour.

SCENTED GARDEN
FOR THE BLIND

Members of the Louisiana, Mo., Garden Club, one of a growing number of outstate gardening groups who come to St. Louis to see the Missouri Botanical Garden, tour one of the Garden's most unique elements — the Scented Garden for the Blind.

Mrs. Russell Schulte, center, in Garden smock, a volunteer Guide, leads a group of senior citizens from Columbia, Mo., on a tour of the Garden.

Dr. Koichi Kawana, holding plans, professor of environmental design at UCLA and architect of the Japanese Garden, directs members of a construction crew in positioning boulders for the waterfall at the northeastern end of the lake in the Japanese Garden. Dr. Kawana's waterfall work was part of a recent two-day visit to the Garden.

DOBASHI BRIDGE
GIVEN BY
CHEMTECH INDUSTRIES
INC.
1975

The Dobashi Bridge, a traditional oriental span incorporated into the design of the Japanese Garden, is inspected, from left, by Dr. Raven; William Shierholz, president of Chemtech Industries, which donated the bridge to the Garden; and Tom K. Smith Jr., president of the Garden Board of Trustees. The Dobashi (Earth) bridge connects the Japanese Garden's southern "mainland" to Teahouse Island.

ANNUAL GIVING PROGRAM TO BE LAUNCHED NEXT MONTH BY DEVELOPMENT OFFICE

An Annual Giving Program, distinct from membership dues and designed to strengthen and expand the services provided by the Missouri Botanical Garden, will be launched next month by the Garden's Development Office.

Its purpose will be simply to keep the Garden growing.

"We must rely on the continued support of our very devoted and loyal members, who realize the importance of the Garden," said Mrs. John Brodhead Jr., Development Committee chairman.

"For the first time, we are inaugurating an Annual Giving Program, a program beyond the already substantial level of membership contributions, to ensure the life of one of the world's most important botanical institutions."

"We fervently hope," she added, "that this year-end appeal will meet with the enthusiastic support of our members and friends."

The Development Office was established in October, 1975, after it was approved during a series of meetings of the Garden's Board of Trustees. Following the opening of the new office, a Development Committee of the Members Executive Board was formed, with Mrs. Brodhead as chairman.

Other members include Mrs. Robert Kittner (assistant chairman), Mrs. Richard T. Nelson, Mrs. W. Boardman Jones Jr., Mrs. J. Butler Bushyhead, Mrs. Dwight W. Coultas, Mrs. Frederick O. Hanser, Mrs. Robert D. Bodkin, Mrs. Eugene Pettus Jr. and Mrs. Philip R. Dodge.

Also, Mrs. Samuel D. Soule, Mrs. Shadrach F. Morris, Mrs. George K. Hasagawa, Mrs. David Hutson, Mrs. Charles B. Thies, Mrs. C.F.P. Stueck, Mrs. Hugh M.F. Lewis, Mrs. John Donnell, Mrs. Hugh Scott III, Mrs. John Harbaugh, Mrs. Richard C. Holton and Mrs. Raymond W. Peters II.

Through the spring and summer of 1976, this able committee worked diligently to find better ways of insuring that Garden members are kept informed of both the Garden's activities and its needs.

Recently, members have been invited to attend a color slide and tour program, presenting the entire range of activities carried on by the Garden and including a guided tour of the John S. Lehmann Building and the Garden grounds.

The next slide-tour program is Dec. 6, 10:30 a.m., in the Lehmann Building.

Members interested in the slide-tour program are asked to telephone the Garden's Development Office. Audrey Senturia, assistant director of development, will be happy to handle arrangements for members' attendance.

Response to this educational program has been gratifying, particularly from those members who have expressed amazement after learning the scope of the Garden's activities, and those who emerged with a new awareness of the Garden's very pressing needs.

The Annual Giving Program is a direct result of efforts to meet those needs, needs the Garden faces in attempting to meet the ever-expanding costs of an inflationary economy.

"We feel that the Annual Giving Program can be of dual benefit," said Mrs. Brodhead. "It gives the Garden the opportunity to solidify its fiscal position during a period of economic difficulty, and it gives Garden friends the opportunity to contribute substantially to the botanical world and to future generations of garden-lovers."

When renewing memberships for 1977, friends of the Garden are asked to consider the mounting problems of Garden maintenance and the importance of their role in the solution to those problems.

Membership contributions are:
Henry Shaw Associate — $1,000
Directors Associate — $500
Sponsoring — $250
Sustaining — $100
Contributing — $50
Membership — $25

Contributions are tax deductible for income tax purposes in the manner and to the extent provided by law. Contributions should be made payable to the Missouri Botanical Garden, 2345 Tower Grove Ave., St. Louis, Mo., 63110.

Membership contributions may be charged to Master Charge accounts.

MEMBERS IN MOTION

MEMBERS TO ENJOY SOUTHERN EXPOSURE

A two-week South American adventure, far from the St. Louis area's annual winter chill, has been planned by the Garden's Members Office and scheduled for Feb. 1-15, 1977.

Those aboard for the winter holiday will visit Lima, Peru; Rio de Janiero, Brazil; and Caracas, Venezuela. The member's price of $1,288 will include charter flight, deluxe hotels, full American-plan breakfasts and dinners in the finest restaurants.

It will also include a tax-deductible gift to the Garden.

For further information, those interested have been asked to contact the Members Office at 772-7600.

MEMBERS SCHEDULE STEAMBOAT SUMMER

All aboard for a steamboat summer!

An historic river excursion, aboard the new sternwheeler "Mississippi Queen," is being planned for Garden members for the week of June 4-11, 1977. The trip will include visits to New Orleans and other Mississippi River port cities. Details will appear in future editions of the *Bulletin.*

CHEMOSYSTEMATICS IS TOPIC OF 23RD ANNUAL SYMPOSIUM

Chemosystematics, the science of following chemical trails to classify and determine the evolutionary histories of plants and animals, can be quite a mouthful to those who know the Missouri Botanical Garden only as a center of floral display.

But on the Garden's scientific side, such subjects are routine.

In October, for example, chemosystematics was the subject of the Garden's 23rd Annual Systematics Symposium, an event of great scientific stature which attracted nearly 300 biologists from across the nation, including seven who presented research papers during Symposium sessions.

Chemosystematics is a field in which the chemical characteristics of plants or animals are studied for use in the classification and the elucidation of their evolutionary histories. Nearly all chemical compounds produced by organisms can be useful for such studies, from the large macromolecules such as DNA and protein to the small micromolecules such as phenolics and terpenoids.

The entire range of these compounds was discussed at the Symposium, made possible in part by funds made available by the National Science Foundation.

Symposium sessions, at which scientific papers were presented, were moderated by Dr. John Averett of the University of Missouri-St. Louis, an expert in this field. Dr. Averett, with Dr. Peter H. Raven, Garden director, is conducting joint chemical studies of selected plants of the evening primrose family.

Among those presenting research papers were:

Dr. Paul Feeny, of Cornell University, who presented a discussion on "Defensive Ecology of the Family Cruciferae." Although members of the mustard or cabbage family possess natural insecticides in their chemical composition, many insects have been able to adapt themselves to feed on such plants, Dr. Feeny said.

In response, many wild crucifer species have developed an ecological defense, becoming less apparent to enemies by growing in such a way as to form an inconspicuous part of the overall vegetation. Dr. Feeny noted that current agricultural methods tend to reduce the effectiveness of natural plant defenses — when planted in monocultures, crop plants are more apparent to natural enemies while at the same time possessing relatively small amounts of chemically-defensive compounds. The more "unapparent" we can make our food crops, through rotation or multiple planting, the less dependent we can become on synthetic pesticides, he said.

During one of the Symposium's more informal moments, participants enjoy a box lunch near the experimental greenhouse on the grounds of the Missouri Botanical Garden.

Dr. Leslie Gottlieb, University of California-Davis, discussed electrophoresis of proteins, one of the newest methods used by plant systematists. Using this method, mutations of genes in plant (and animal) populations can be adduced from changes in protein structure, and this information can be useful in the study of plant evolution.

Dr. Mary-Claire King, University of California-Berkeley, the first woman to take part in the Symposium, presented a discussion on molecular evolution, outlining her work on the comparison of amino acid sequences of proteins. Such sequences, she said, can

Dr. John Averett, left, of the University of Missouri-St. Louis, served as moderator of the Systematics Symposium. Presenting papers during the Symposium sessions were, from left, Dr. Paul Feeney, Dr. Mary-Claire King, Dr. B. L. Turner, Dr. Leslie Gottlieb, Dr. Robert Adams, Dr. Thomas Mabry and Dr. David Fairbrothers.

serve as evolutionary "clocks" to assist scientists in tracing evolutionary lineages.

Dr. Tom J. Mabry, University of Texas-Austin, explained how a knowledge of the chemistry of pigment production has been essential in the understanding of evolution in the order Centrospermae, which includes the cactus and pigweed families.

Dr. Robert P. Adams, Colorado State University, discussed the species level by tracing in detail the evolution of a juniper now distributed from the Ozarks to northern Mexico.

Dr. David E. Fairbrothers, Rutgers University, reviewed the contributions serotaxony has made to plant classification through the use of immune reactions to proteins, illustrating his discussion with results from his recent laboratory work.

Dr. B. L. Turner, University of Texas-Austin, concluded the Symposium with a provocative address entitled, "Chemosystematics and Its Effects Upon the Traditionalists." Dr. Turner illustrated how chemosystematics, when properly employed, can have a profound influence on the solving of problems which are intractable to the more traditional approach of morphological analysis.

— Gerrit Davidse
Department of Botany

Missouri Botanical Garden members and "prospective members" were winners together at the prize drawing held during the recent Membership Preview Party for the Fall Flower Show. Taking home the colorful potted mums pictured above were Garden members Rose Radunsky, Charlotte Leu and Douglas Rendelman, as well as non-members Gloria Wallace, Elizabeth Basman and Nan Brichta.

CHRYSANTHEMUM BALL RAISES $33,000 FOR BOXWOOD GARDEN

The Chrysanthemum Ball — more than two years in the making and ultimately featuring a cast of hundreds — was held on the Garden grounds in September and raised more than $33,000 for the Edgar Anderson Memorial Boxwood Garden.

A check for $33,812, total proceeds from the special fund-raising event which brought designer Gloria Vanderbilt and some 700 others to the Garden, was presented to the Garden Board of Trustees by Mrs. Walter G. Stern, chairman of the ball.

In appreciation of her most successful efforts, Tom K. Smith Jr., president of the Board of Trustees, presented Mrs. Stern with an engraved silver platter.

In a report to the Board, Mrs. Stern acknowledged that much credit for the ball's success was due to the solicitation of Corporate Sponsors, which brought in $18,000.

Future fund-raising events at the Garden will probably employ a festival format, Mrs. Stern said, with a wider appeal to a greater number of Garden members and friends.

Mrs. Walter G. Stern, Chrysanthemum Ball chairman, shows to Dr. Peter H. Raven the engraved silver tray given to her in appreciation by the Garden Board of Trustees.

GARDEN BEGINS CO-OP PROJECT, PLANT DISCOVERY EXPERIENCE, WITH MAGNET SCHOOL PROGRAM

In charge of much of the Magnet School Program for the Garden and the St. Louis Public Schools are Ken Peck, head of the Garden Education Department; Lois Cannon, coordinator of the Magnet School Program at Stix School; Dr. William M. Klein, Assistant Director of the Garden who is Project Director, and Susan McNamara of the Garden education staff.

The Missouri Botanical Garden's participation in the St. Louis Magnet School Program — a cooperative curriculum involving use of both Garden and Shaw Arboretum facilities — has begun with a workshop attended by some 15 teachers and administrators from the Investigative Learning Center of Stix School.

Ken Peck, center, head of the Garden's Education Department, conducts orientation tour for teachers and administrators from the Investigative Learning Center at Stix School.

The cooperative project has been designed to emphasize learning about plant life through discovery and firsthand experience with growing things.

The workshop, held recently at the Garden, was under the direction of Dr. William M. Klein, the Garden's assistant director, and Project Director of the cooperative program. The workshop was conducted by Dr. Klein, with the assistance of Ken Peck, head of the Garden's Education Department; Susan McNamara, instructor in the Education Department; and Lois Cannon, coordinator for the Investigative Learning Center at Stix School.

The group also attended a Saturday morning orientation session at the Arboretum, under the direction of Dave Goudy, Arboretum superintendent, assisted by John Doty of the Arboretum staff.

Fall, winter and spring experiences are planned for students involved in the full curriculum, which includes regular visits to the Garden and the Arboretum as well as classroom sessions and workshops. Members of the Garden's Education Department staff will visit Stix School to conduct classroom activities.

St. Louis' Magnet School Program, funded by a grant made under the Emergency School Aid Act (ESAA II), is designed to offer courses aimed at attracting a racially-balanced enrollment to each Magnet School. Bob Powers has been named coordinator and resource teacher for Plant and Animal Ecology study at Stix School's Investigative Learning Center.

Major corporations and several cultural and educational institutions in the St. Louis area are making resources available to the Magnet School Program, but only the Missouri Botanical Garden has offered a full project of activities both in the classroom and in the "field."

Gardening in St. Louis

A SEASON OF GIVING

Gardening activities have nearly come to an end for 1976, as we approach the season when we begin to give serious consideration to garden-oriented gifts for friends and relatives.

An ideal holiday gift is a membership in the Missouri Botanical Garden, a year-long Christmas present which brings the new member a lengthy list of garden-style benefits as well as the monthly Missouri Botanical Garden Bulletin.

In addition, a visit to the Garden Gate Shop and the Plant Shop will offer the Christmas shopper a wide assortment of plants, plant accessories, garden-related items and books to fill out that unfinished gift list.

KEEPING GREEN GIFTS GREEN

Christmas gift plants should receive special attention. Many can be used as table decorations during the daylight hours but should be moved to an area where the temperature is as cool as possible during the night. Following this pattern will ensure that the plants have a longer life.

Azaleas should have their pots immersed in water every second or third day, held under water until bubbles cease to rise. They should be drained on a sideboard before returning them to their place.

All flowering plants should be given as much light as possible during the day, even going so far as to place them under sources of artificial light for several extra hours.

The Poinsettia Show, featured at the Garden throughout December, is an ideal event to attend with friends to view examples of these flowering plants on display. A stroll through the Climatron or other indoor display areas will make a pleasant December afternoon.

Poinsettias in the home should receive good light during the day and care should be taken to ensure that they are not overwatered. An occasional feeding of a liquid fertilizer will be beneficial to all flowering plants.

TREE TRIMMING

December is an excellent month to trim some of the evergreens and holly, removing selected end pieces and longer sections to properly shape the plant. The greens can be used for holiday decorating within the home or to pass on to friends.

House plants should be inspected to make sure they are in good condition and show no sign of insects, particularly spider mite. If spider mite should become a problem, spray with a good miticide immediately and continue at intervals until they are brought under control.

Avoid feeding foliage plants or overwatering during the dark days for the next month or two.

OUTDOORS

Garden hoses should be inspected to make sure that they are thoroughly drained and properly stored for the winter months. Freezing, thawing and the failure to move such items into storage may cause hoses to split open.

Mulching can still be applied around many newly set out or already established plants, to prevent the ground from freezing and thawing so rapidly.

Last of all, December is a good time to send away for seed catalogs and spend a spare evening or two planning and preparing for garden plantings next spring.

— Robert J. Dingwall
Chief Horticulturist

A BOUQUET TO THE VOLUNTEERS

The Missouri Botanical Garden's corps of Volunteers are those hard-working, always-willing-to-help people who perform dozens of glamourless tasks each day to keep things humming behind the Garden wall.

Without them, the hum could become a screech.

One of the most popular and interesting areas in which the Volunteers work is the Climatron, the enormous tropical greenhouse with its famous domed shape which for many visitors and friends is the symbol of the Missouri Botanical Garden.

Because of the more than 1,200 tropical plants housed there, much work is required.

Under the guidance of Bill Wagner of the Garden staff, the Volunteers hose and sweep the Climatron walkways to keep them free of debris. They prune plants and trees to keep them of manageable size. They weed and rake the soil to maintain the appearance and even growth, and they even shake many of the tall trees to eliminate dead leaves.

Volunteer activities extend also to the adjacent Mediterranean and Desert Houses, which require equally close attention. In addition, Volunteers serve as hosts and hostesses, greeting visitors and explaining the history and types of plants contained in the display houses.

Anyone interested in serving the Garden in this unique way, as a horticultural worker or a host/hostess, is asked to contact the Garden's Volunteer organization at 772-7600.

— Carol Taxman
Chairman of Volunteers

VOLUNTEERS
A group of hardworking volunteers handle the once-a-year mailing of brochures on the Garden's educational programs. Clockwise from left they are: Mildred House, Margaret House, Henrietta Klickerman, Viola Wagstaff, Olga Klickerman, (standing) Geraldine Wencker, Madeline Hadley, and Vi Taylor.

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2345 Tower Grove Avenue
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Missouri Botanical Garden Bulletin

A Report from Saudi Arabia

"The Climatron Seemed Light Years Away..."

I stood by the fire in the desert, gazing incredulously at the scene before me, and the Climatron suddenly seemed light years away.

As a non-Muslim, I had no part in the colorful drama taking place before my eyes. A few hundred feet from where I stood, 25 Muslims were lined in single file, facing Mecca and the dying sun. Our host, the Emir, Khalid Al-Sorairi, stood in front of the line and led the evening prayer.

After the men had made their last salaam into the soft sand, now pink with the sun's last rays, they quietly dispersed to await the evening meal. About me were some 50 one-hump black camels, loafing in the treeless desert, their soft eyes reflecting satisfaction at having had their fill from huge water troughs, filled from vans the size of milk trucks.

The streets of St. Louis, the pathways of the Missouri Botanical Garden, would be scenes from another world.

It was mid-July and the desert of Saudi Arabia had been my home for several weeks. My companions, three scientists and six helpers, were from the University of Riyad, which had invited me on the field trip. We were collecting flowering plants throughout Saudi

(Continued on Page 6)

Dr. John Dwyer, right, of the Garden's Department of Botany, shares a desert meal, from left, with a technician; Prince Khalid Al-Sodairi of Nejran; Prof. Abdullah El-Sheikh of Saudi Arabia; and Mohamed Sabry El-Sayed Awad of Egypt. Dr. Dwyer, inset above, spent several weeks studying flora in the Saudi Arabian desert.

Volume LXV Number 1
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A JANUARY PROGRESS REPORT: JAPANESE GARDEN TAKES SHAPE

Recent progress on the construction of the Japanese Garden, moving toward a public opening next spring, has included the near-completion of the garden's waterworks – its lake and its waterfalls.

The four-acre lake, central to the landscape of the $1.2 million development, has been given its most necessary element: water. And construction of the garden's two waterfalls is reaching the final stages.

During his latest visit to the Missouri Botanical Garden, Koichi Kawana, professor of environmental design at UCLA and architect for the Japanese Garden, supervised the placing of the final stones and boulders for the waterfalls, preparatory to the filling of the lake.

Plans for the new Japanese Garden, a $1.2 million development scheduled to be completed next spring, are studied, clockwise from left, by David Binks of the Garden staff; Karl Pettit III, architect; and Prof. Koichi Kawana, designer of the Japanese Garden.

At that time lines were attached to a second pump station and arrangements for the second waterfall were completed by Professor Kawana.

The precise placement of the multi-ton boulders allows for waterfalls of contrasting style, each designed to evoke different feelings, Professor Kawana has explained.

The three-step waterfall at the northeast edge of the lake is intended, in the highly refined aesthetic language of the Japanese garden as an art form, to evoke feelings of tranquility or delight. By contrast, the long uninterrupted-sheet falls to be developed on the northwest edge provides a more formal element, a dynamic force inviting respect and humility.

The garni green boulders – some weighing five tons – with a somber but suggestive tonality favored in Japanese gardens, will shape a recirculating flow of water pumped back uphill by the totally submerged pump stations.

Bonsai pines and other plantings will fringe the falls to conceal alternate stretches of cascading water from all vantage points. Each half-hidden view thus creates a provocative allure or mystique highly prized in Japanese landscaping, according to Professor Kawana.

"The waterfall in a Japanese garden presents one of the many moods or forms of water corresponding and interacting with various human moods and feelings. The dynamic motion of falling water contrasts with the placid reflective quality of the motionless water in the lake," Professor Kawana has noted.

The style of the Japanese Garden being developed at the Missouri Botanical Garden is intended to relate to all of the senses of those who stroll through it, so that the differing sounds of the waterfalls will add a crucial and enriching aural dimension to the total Garden experience.

Professor Kawana, assisted by Garden staff members, has also readied Teahouse Island and other focal areas for planting. Two large trucks have delivered cargos of plants, with two more to come.

Plantings include trees and shrubs, a variety of pines, including black pines, Austrian pines, mugho pine and *Cryptomeria,* known as the Japanese cedar. Shrubs include euonymus, quince and azaleas.

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$70,000 GRANT RECEIVED FROM STATE ARTS COUNCIL

The Missouri Botanical Garden has received a $70,000 grant from the Missouri Arts Council, with $20,000 earmarked for programs and $50,000 in revenue sharing funds for capital improvements in the new Japanese Garden.

The grant is for the fiscal year ending June 30,1977.

The $50,000 grant covers construction and installation in the Japanese Garden. The program grant of $20,000, for professional services and educational programs, is applicable to the design, installation and interpretation of the Japanese Garden; the English Woodland Garden, dedicated in May, 1976; and the Edgar Anderson Memorial Boxwood Garden, projected to begin in 1977.

The Japanese Garden, under construction, will be dedicated on May 5, 1977.

With the help of this funding, the Missouri Botanical Garden is making available to the public, through information programs and tours, the artistic features of gardening and landscaping embodied in unique ways in the Japanese Garden, the English Woodland Garden, and the projected Boxwood Garden. In its many other elements — the Anne Lehmann Rose Garden, the North Rose Garden, the Scented Garden for the Blind, the floral display shows, and other unusual features — the Missouri Botanical Garden has raised the quality of gardening and landscaping awareness to the level of a permanent art form.

The purpose of the Missouri Arts Council is to foster the growth, development and appreciation of the arts in Missouri. It does this by providing financial and technical assistance to organizations for arts programs that serve the people of the state.

Missouri is a strong leader in the swelling national ranks of attendance and participation in arts programs. According to official estimates the total attendance in arts programs assisted by the Missouri Arts Council for fiscal year 1976, throughout the 20 regional districts of the state, will be more than 4,335,000 persons, or one-half million more persons than attended professional football and baseball games in the state last year.

The Missouri Botanical Garden can claim to have served more than 300,000 of those persons, as well as some 40,000 adults and children who take part in the Garden's continuing educational and garden awareness programs.

EASTWARD HO! TOUR OF JAPAN PLANNED FOR GARDEN MEMBERS

A three-week tour of Japan, including visits to the ancient capital of Kyoto and St. Louis' sister-city of Suwa, has been arranged for Missouri Botanical Garden members and scheduled for Oct. 2-22, 1977.

Conductor of the tour will be John Elsley, Curator of Hardy Plants at the Garden, with travel arrangements coordinated through the St. Louis chapter of the Japanese American Citizens League and the Japan Travel Bureau.

Dr. Peter H. Raven, Garden director, and Mrs. Raven will accompany the tour group.

The tour itinerary will concentrate on Japan's central regions and will include a five-day visit to Kyoto, ancient capital and cultural center of Japan. Kyoto is the site of many of Japan's finest traditional and historic gardens.

Other cities included in the tour schedule are Nagano City, capital of the Nagano Prefecture, Missouri's sister-state which gave the Teahouse for the new Japanese Garden; St. Louis' sister-city, Suwa, situated in the magnificent Japanese Alps; historic Nara; and Takamatsu, reached by a boat trip through the Inland Sea.

At Nikko, tour members will visit an Alpine botanic garden and view the spectacular native woodlands around neighboring Lake Chujenji. The annual Osaka Chrysanthemum Show is on the tour schedule, as well as the unique Bonsai Village of Omiya, located near Tokyo. A visit to one of the famous bonsai nurseries is planned. The group will visit Tokyo for several days, both at the start and end of the tour.

Throughout Japan, travel will be either by rail or private motorcoach. In addition to our Missouri Botanical Garden tour leaders, an official Japanese guide and an interpreter will accompany the visitors full time. Various local experts will join the tour as needed.

At the time the Bulletin went to press it is estimated that the full cost of the trip, including a $250 tax-deductible contribution to the Missouri Botanical Garden, will be approximately $2,000. Further details and information regarding the Japanese Tour can be obtained from the Membership Office at the Garden, 772-7600.

An illustrated lecture on Japan with special emphasis on the places to be visited will be presented by John Elsley on Wednesday, Jan. 26, at 10:30 a.m. and 7:30 p.m. in the auditorium of the John S. Lehmann Building. All Members are invited to attend.

ANSWER MAN ON WINTER LEAVE

The Missouri Botanical Garden's Answer Man Service, cancelled for the remaining winter months, will be reinstated sometime in early March. In the meantime, plant questions can be referred to Answer Man Paul Kohl by telephoning the Garden, 772-7600, extension 13, between 9 a.m. and noon, Monday through Friday.

Garden To Be Site of Special Architect Sunday

On Jan. 9, the American Institute of Architects will begin its eighth year of "Architect Sundays" with a visit to the Missouri Botanical Garden, a day-long event featuring tours of the Garden's architecturally interesting buildings.

From 2 to 5 p.m., informational tours will be given by representatives of several architectural firms, including Murphy, Downey, Wofford and Richman (the Climatron); and Eugene J. Mackey & Associates and Hellmuth, Obata & Kassabaum (the John S. Lehmann Building).

At 3 p.m., an illustrated presentation, entitled "The Garden for Spring," will be given in the Lehmann Building by Robert J. Dingwall, chief horticulturist. In addition, visitors will be able to view the Poinsettia Show in the Floral Display House, and shop in the Plant Shop and Garden Gate Shop.

The day's events are free to the public, included in the Garden's usual gate admission price.

Guide Program Filled

Twenty-five volunteers have filled the registration rolls for the new Guides' training course, scheduled to begin Jan. 4 and to continue each Tuesday morning for eight weeks.

Guide trainees will attend the weekly sessions from 9:30 a.m. until noon, where members of the Garden's professional staff will provide training in Garden history and background and the information necessary to enable the Guides to conduct tour programs for visitors.

The training will include preparation to conduct general tours or individual tours of the Climatron and other display houses, the English Woodland Garden, the Rose Gardens, the Scented Garden for the Blind, the Herbarium, the Missouri Tree Walk and the new aesthetic experience to be found in the Japanese Garden.

Some 50 guides currently conduct daily tours, Monday through Saturday. Each guide contributes an average of one day each week, conducting two tours of the Garden grounds.

Peak tour times are usually in the fall or late spring, but school classes, horticulture students, garden clubs and senior citizens groups provide steady, year-round activity for the Guides.

VOLUNTEERS CHICAGO-BOUND

A special Chicago excursion for Missouri Botanical Garden Volunteers, highlighted by visits to the annual Chicago Flower Show and other cultural sites, has been arranged for March 30 and 31, 1977.

The Chicago Flower Show, a special area-wide horticultural event, will be held at McCormick Place during the last week in March. In order to take advantage of this special display, sponsored by the Chicago Horticultural Society, a bus has been chartered. The first 40 Volunteers to reserve a seat will have an opportunity to visit the show and enjoy a fun-filled two days in Chicago.

Tour horticultural guide will be Bob Dingwall, Chief Horticulturist for the Missouri Botanical Garden. The group will stay at the McCormick Inn, across the street from the Flower Show.

Also included in the trip is a visit to the Chicago Art Institute, which houses one of the finest art collections in the country.

The Flower Show will combine profusions of flowers — fountains of color to drive out the winter doldrums and usher in a vibrant spring — rose gardens, idea gardens, orchids and tropical displays, flower arrangements, and garden ideas.

Entries are from horticultural schools, garden clubs and botanical organizations.

Commercial categories are also included in the show — the Garden Market, which sells live plant material, seeds and bulbs; the Flower Market, an outlet for cut flowers and materials directly related to cut flowers; and a special Home and Yard Improvement Center.

The Merchandisers Mall is a section for exhibitors offering giftware items, pottery and crafts.

More information concerning the trip or the Garden's volunteer program may be obtained by calling the education department, 772-7600.

— Carol Taxman
Chairman of Volunteers

FROM SHAW HOUSE TO DOLL HOUSE

Authentic Victorian dolls, the playtime treasures of children a century ago, will be on display at Tower Grove House during the month of February.

Approximately a dozen dolls, all belonging to a local collector, will be included in the exhibit. The dolls represent a variety of sizes and are garbed in various costumes of the day — a period extending from the 1840s to the 1890s.

The Victorian dolls have never before been displayed for the public.

Planting the Seeds of Ecological Awareness

To help them develop an awareness and appreciation of their environment, students regularly visit the Garden for first-hand experiences with plants. Here, two groups of recent visitors – students from Cote Briliante School and those enrolled in St. Louis' Magnet School Program – build terrariums and try their hands at plant propagation.

REPORT FROM SAUDI ARABIA

(Continued from Page 1)

Arabia and studying the vegetation of this vast kingdom, which lies east of Africa, a wedge between the Red Sea and the Arabian Gulf. Its population of about seven million people is spread over an area as large as the United States east of the Mississippi River.

Many of the plants we collected were destined for the Herbarium of the Missouri Botanical Garden, a treasury of dried plants from every niche of the world gathered without regard to politics or religion.

It is the politics of oil that brings most of the foreign visitors to Saudi Arabia, businessmen and entrepreneurs anxious to share in the great wealth generated by the oil economy. Americans enjoy favored status, because the Saudis are ever mindful of our assistance in getting the oil above ground or up from the depths of the Arabian Gulf.

Our objective was plants, however, not oil. Our main question was whether the vast sea of sand, which makes up so much of Saudi Arabia, supports much vegetation, and what kind.

The number of species of flowering plants in the entire country is about 1,100, the total equal to about one-half the number of species in the state of Missouri. Despite the lack of variety, the rains, we were told, often turn the desert into a green carpet. Unfortunately, our trip took place during the dry season.

Saudi Arabia's millions of camels, sheep and goats for the most part feed on vegetation in the wild or on plants, like alfalfa, grown in irrigated areas. The rains amount to only a few inches per year, although in the Hejaz Mountains, paralleling the Red Sea, annual rainfall may amount to 20 inches. The rigors of soil and climate are severe even in the mountains, and only the hardiest species have run the gauntlet of time and evolution.

Fewer than 50 species of native trees exist in the country, with acacia trees dominant. The date palm, the only species of palm in the kingdom, reigns supreme both on the tables of the Saudis, and on their coats-of-arms. Grasses, composites, legumes, and mustards are common, but there is probably only one species of orchid. Ferns are rare and mosses even more so. Flowers tend to be small, with whites and yellows predominating.

Beauty in this desert vastness is not basically color, but form. To suddenly come upon a graceful succulent aloe with a spire of flowers, or a dainty composite seamed in a rocky background, is an exciting adventure. The vegetation is mostly low-growing — the often stunted, gnarled, and spiny stems giving little evidence of the elongate root systems reaching deep for a few dregs of water.

During our seven-week stay, we crossed vast stretches of sand so hot that shoes gave way to sandals. To expect water to surface seemed out of the question. And yet, suddenly, a green sword of date palms would cut across the sand, signalling fresh water. An adobe farm house would appear, the laughter of children could be heard. Or the stillness of the desert would be broken by the hum of a water pump, set in an emerald-green, purple-splotched patch of alfalfa, nestled among date palms and tamarisk trees.

Water holes, brimming craters in the sand, would appear from nowhere. As we crossed the wadis, sere

The black camels of Saudi Arabia share the desert landscape with Dr. Dwyer, left, and Prof. Abdullah El-Sheikh.

Dr. Dwyer shares a common bowl of camel's milk and a plate of dates with Prince Khalid Al-Sodairi.

in the dry season, the tires of our vehicles would grind into the sand, a sure sign water was a foot or so beneath the the bone-dry sand.

Saudi Arabia may be inhospitable to plant life, but our own visit there was marked by courtesy and hospitality everywhere. The emirs and princes supplied our living quarters in well-kept hostels and also provided our meals.

On that night by the desert campfire, we watched as the Emir's servants (some armed with rifles and sheathed knives) spread out four large Persian carpets on the sand for the evening meal. To combat the blackness of the night, a pickup carrying a modern portable generator raced across the desert to us and — *voila!* — electric lights were strung out over the carpets, competition for the bright Arabian moon and stars.

Forty men sat along the periphery of the carpets, with the scientists as guests of honor and seated next to the Emir, a charming host. From another truck servants brought huge platters of rice, each mounted with a roasted lamb, and side dishes of luscious fruits and vegetables. For a nightcap we drank from a common bowl of fresh camel's milk, a frothy, cream-like liquid (alcoholic drinks are taboo in Saudi Arabia). Our desert picnic was near Nejran, a town close to the Red Sea and the country of Yemen.

When we were not the guests of local emirs or princes our small band would pitch our sleeping bags on the desert floor, after a meal, usually of rice, meat and/or tuna, and bread. We drank enormous amounts of hot tea, even in the middle of the day when the temperature reached 130°, but no ill effects from the food occurred in the seven weeks of field work.

Saudi Arabia is, however, not a land for tourists, unless the Muslims who journey from the ends of the earth to Mecca, to make the holy pilgrimage, are considered tourists. And yet the country offers the foreign visitor much to see and think about.

I saw no great gardens in Saudi Arabia, although we surmised there may be some behind the walls of the royal villas. Walled-in miniature gardens were common in the new homes of the middle class. The lack of spectacular gardens is perhaps, for the moment, a good thing. So much building and construction is taking place in this oil-endowed country that extensive gardens can be expected only when the dust of progress settles.

Perhaps the most striking feature about this hospitable country is the fervor of the people for the Islamic religion, exemplified by the leader of our field trip, Professor Abdullah El-Sheikh of the University of Riyad, and the two skilled Egyptian scientists with us, M. Sabry El Sayed Awad and Abdullal El Fattah Nassar, who is on assignment to the University.

Their deep devotion, in fact, was a reassuring quality to a lone American botanist, deep in the desert on his first trip to Saudi Arabia.

—John Dwyer
Department of Botany

Israeli Scientist in Moss Study Here

Dr. Ilana Herrnstadt, a research associate of the Hebrew University in Jerusalem, is working in the Missouri Botanical Garden's Botany Department on a "Moss Flora of Israel" project, a cooperative program supported by members' contributions.

This scientific interchange, between the State of Israel and the Missouri Botanical Garden in the specific area of a moss flora, is the outcome of a visit to Israel by Dr. Peter Raven, who was a guest of the Life-Science Institute of the Hebrew University for a month in 1975.

At the suggestion of Dr. Raven, Professor Clara Heyn, head of the Systematics Division, Department of Botany of Hebrew University, became very enthusiastic about a proposed scientific project to study the mosses of Israel. She was able to obtain a commitment of Israeli funds toward the realization of this goal.

Until this project, the only active worker on the mosses of Israel has been a retired pharmacist whose hobby is mosses. There is no modern published moss flora of Israel. Dr. Heyn assigned the study to Dr. Herrnstadt, who had recently completed her doctoral degree with Dr. Heyn.

Dr. Herrnstadt arrived in September and is working with Dr. Marshall Crosby, Chairman of the Garden's Department of Botany and an internationally respected expert on the subject of mosses.

One of the exciting developments of such a project as this is that it increases academic communication between St. Louis institutions and the Hebrew University in Jerusalem. It also strengthens the Garden's program in systematics and the evolution of mosses, and will provide a trained worker in a field of science presently unrepresented in Israel. The result of the project will be the publication of an important scientific study on a major group of plants in the Middle East.

Dr. Raven has pointed out, "There are some 20,000 species of mosses worldwide and, although they are relatively inconspicuous, they are significant ecologically, as in breaking down rocks, building soils, and the like.

"Mosses are often sensitive indicators of different soil types, and it would be very valuable to have a scientist trained in the study of mosses in Israel, to complete an inventory of the nearly 200 species of mosses which occur there, for their identification is a matter for specialists."

Mosses are structurally simple plants, but they have adapted to many environments, including very dry ones. In the Middle East, the rainy season occurs during a 3-4 month period, between November and February. It is dry for the rest of the year. Only about 5-150 mm of rain falls annually in the Israeli desert. Mosses, however, exist there.

Dr. Ilana Herrnstadt

Some occupy small, moist enclaves in the otherwise desiccated desert. Others grow during the short rainy season and survive the drought conditions that prevail the rest of the year by various means. Some become dormant, while others are ephemeral, surviving the drought in the form of spores rather than as leafy plants.

Anatomical adaptations, like reduction in leaf size and increase in number and size of papilae on the leaf surfaces, are common among these desert mosses.

Dr. Herrnstadt was born in Israel of parents who immigrated to what was then Palestine in 1933 from Breslau, Germany. She lived all her life in Haifa, a port city, until she went to Jerusalem to study at the Hebrew University. There she received a Master's Degree and Ph.D. in biosystematics and taxonomy. She is now a research associate of the Hebrew University, Department of Botany.

ORIENTATION PROGRAM TO REACH ALL MEMBERS

During the next four years, under a program schedule organized by the Development Committee of the Women's Executive Board, every member of the Missouri Botanical Garden will be invited to attend a special orientation program on the Garden and its activities.

The Committee, headed by Mrs. John Brodhead, sponsors the programs every two months, hosting small groups of members at a refreshment session, a slide-show overview presentation and a behind-the-scenes tour of the Library and Herbarium.

The tours are arranged and coordinated by Mrs. C.F.P. Stueck.

Members interested in attending one of the sessions — the next scheduled for Feb. 7 — have been asked to contact the Development Office.

Dr. Avinoan Danin, Botanist, Conducts Project Research Here

Among the scientists who regularly call upon the Missouri Botanical Garden for research assistance, one of the most recent has been Dr. Avinoan Danin, lecturer in Botany at Hebrew University in Jerusalem and currently under contract with Tahal Consulting Engineers Ltd., an Israeli water project firm with an office in Managua, Nicaragua.

Dr. Danin was invited here by the Garden's director, Dr. Peter H. Raven, whom the Israeli scientist helped to host when Dr. Raven was lecturing at the Hebrew University in 1975.

Dr. Danin was one of the six Hebrew University scientists who recently conducted a complete ecological survey of the Sinai Peninsula.

It is the aim of Tahal to see if botanists could help make soil surveys more accurate, by determining the quality of the soil and the vegetation, and by learning the relationship of the plant community and soil conditions in tropical countries.

The Tahal Company plans and develops water projects, specifically irrigation projects in the tropics. In order to do this properly the vegetation-soil relationships need to be thoroughly understood.

Before coming to the Missouri Botanical Garden, Dr. Danin went to Nicaragua to study soil-vegetation relationships as a prerequisite to agricultural planning. It was Professor Danin's first visit to Central America and the United States. He came to the Missouri Botanical Garden, a world center for the study of the plants of the Central America, to name his plant specimens and to complete his evaluation of them.

Danin brought with him 300 specimens which were distributed to experts on the Garden staff, who examined and identified the plants for him.

FRESHMEN LEGISLATORS VISIT GARDEN

Approximately 20 freshmen Missouri legislators had breakfast at the Missouri Botanical Garden recently and toured the new Japanese Garden and other Garden attractions.

The breakfast was served in the Slate area of the John S. Lehmann Building, after which the legislators were taken on a guided tour of the Japanese Garden as well as the Climatron and other attractions by Dr. Peter H. Raven, Garden director.

Before leaving the Garden to visit Hannibal and return to Jefferson City, the legislators assembled in the Lehmann Building auditorium to hear Donald Tapperson, executive director of the Missouri Arts Council, speak on the state of the arts in Missouri.

ALSO GROWING AT THE GARDEN: OUR MEMBERSHIP, OUR THANKS

During the more than 100 years of its history, the Missouri Botanical Garden has conscientiously sought and consistently received the level of community interest and membership support necessary to ensure the survival of this unique botanical institution.

Never has the need for such support been so great as it is today.

And never has the level of support been so great.

As of Dec. 1, 1976, membership in the Missouri Botanical Garden has grown to 8,700 – more than double the number of members in 1974 and the highest level of membership in Garden history.

In the spring of 1974, with membership level standing at about 4,200, the Garden's first organized membership development plan was launched. The professional services of Direct Mail Corporation were engaged to develop and implement a long-range program to ensure the steady growth of Garden membership. Such efforts have been successful, and will certainly continue.

But for a moment, the Garden would like to pause and offer its sincere gratitude to the thousands of Garden members for their generosity, their interest and their support, and most particularly for the persuasiveness with which they recruit new members.

The Garden receives no direct tax support, so its operations depend upon voluntary contributions from those who wish to help perpetuate this distinguished botanical institution. Through their support, members contribute directly to newer and more beautiful horticultural displays, an expanding educational program and scientific research of world-wide significance, conducted to benefit mankind.

In turn, the Garden has much to offer members. Most important, it provides a place of great natural beauty, preserved forever for their enjoyment. Membership offers special opportunities, such as discounts on study and nature courses and on items from the Plant Shop, unique gifts from the Garden Gate Shop and special domestic and foreign garden tours.

Members also receive the monthly Missouri Botanical Garden Bulletin, invitations to all floral show private preview parties and other social activities; first notices of lecture series, adult and youth courses and programs; and unlimited year-round admission to the Garden, Tower Grove House and the Shaw Arboretum at Gray Summit, Mo.

Something new and exciting – evidence this year: the $1.2 million Japanese Garden – always awaits the member behind the Garden wall.

And fortunately, new and exciting people are constantly stepping forward to become Garden members, to contribute to the Garden's future and to work as ambassadors of goodwill in the effort to reach even higher membership totals.

JANUARY GARDENING

January is the month, not only for New Year's resolutions and television bowl games, but for planning the new garden that you are hoping to cultivate this year. It is the month to leaf through seed catalogs and gardening magazines, reading carefully the glossy write-ups of the new plants being introduced for 1977.

And it is the month to place orders for seeds that will be planted later.

In the home greenhouse, colorful plants and flowers bolster the spirits when it is cold and snow-blown outside. Here one can find pleasure in the colors and textures that can be found nowhere else in a winter world.

But besides reading and reflection, January is also a month to get busy!

This is the month when you can start forcing the bulbs that you planted last October. It is a good time to start the bulbs of early spring color, such as the tuberous begonias or caladiums. Cuttings of favorite house plants can be made now. Also, seeds can be planted, some of the early annuals, for early use indoors and later transplanting outside. Pansy seeds planted this month can be put out in late February or early March, and will flower much more heavily than plants started last fall.

WATER AND AIR

During cloudy weather, water mature plants sparingly; few plants die from insufficient watering in the winter, but a soggy soil coupled with dark days is an invitation for fungus disease to attack the plant.

Even though it is cold outside, be sure that there is adequate ventilation in the greenhouse, particularly during the warmer parts of the day.

For the birds, keep a good supply of food out — suet, seeds, apples and peanut butter. It is important that feeding be provided on a daily basis to make sure the birds have sufficient nourishment during the winter months.

Christmas flowers should be carefully tended. Azaleas should be repotted and kept in good growing condition. The feeding of these plants can be begun, at two to three week intervals, while they are making new growth.

During warm spells, it is extremely important to get out and water the garden heavily, because of the dry season that we have experienced. Many plants will suffer this winter if they cannot take moisture up through their roots on mild days.

Mulches should be applied heavily on all plants, because of recent severe winter weather and to give good protection throughout the balance of the colder months. Wood ashes should be placed in covered containers for use in the garden in early spring.

FLOWERING TREES AND SHRUBS

Toward the end of the month, you may start forcing branches of flowering trees and shrubs, such as forsythia, flowering crabapples and others. Cut the branches and spray them with warm water; place them in containers, six to eight inches below water, and keep them at temperatures of 65 to 75 degrees until they begin to show color. Then they can be arranged into handsome bouquets for indoor use as a promise of the spring to come.

Humidity may be a problem with house plants or home greenhouses. In the greenhouse, dampening the walks will help to raise the humidity level. Pans of water placed beneath benches will have the same effect. In the home, it may be necessary to utilize tray gardens — metal or glass trays layered with pebbles, with the plants on holders and the water kept just at the top of the pebble layers.

Washing the plants with warm soap and water will help keep them dust-free and in good condition. Give the plants a half turn at regular intervals to prevent their growing in one direction.

During the mild days, check the garden — any plants that have heaved, due to heavy freezing and thawing, should be firmed back into the soil; a light mulch should be applied to prevent further heaving at a later date.

Leaves that have accumulated on the lawn should be raked and removed, so they do not become packed and cause damage to the grass itself.

— *Robert J. Dingwall*
Chief Horticulturist

New Trustee

The Rev. Donald E. Mayer, pastor of Hope United Church of Christ at 6273 Eichelberger St., has been appointed a member of the Board of Trustees of the Missouri Botanical Garden, it was announced by Tom K. Smith Jr., Board president.

A 1955 graduate of Elmhurst College in Elmhurst, Ill., the Rev. Mr. Mayer obtained his Bachelor of Divinity degree from the Eden Theological Seminary, Webster Groves, in 1959. He returned there for postgraduate work and earned a Master's degree in Systematic Theology in Pastoral Care in 1968.

Married and the father of two sons and a daughter, the Rev. Mr. Mayer has served the congregation of Hope United Church of Christ for nearly 14 years. Last October, the Rev. Mr. Mayer was elected president of the St. Louis Board of Education.

PROGRAMS PLANNED FOR GARDENERS OF ALL AGES

As part of its program of Continuing Education in Horticulture, Botany and Natural History, two adult courses and one Saturday morning activity for children are being offered in January by the Missouri Botanical Garden.

"Botany for People," a lecture course on selected topics in botany, covers flower structure and pollination, plant structure, classification of major plant groups, and some ecological subjects.

Each topic will be illustrated with living and preserved specimens or slides and will be supplemented with short printed summaries for the student.

Six meetings will be held on Monday mornings, 10 to 11:30 a.m., from Jan. 10 through Feb. 14. The instructor is Kenneth Peck, Head of the Education Department.

House Plant Culture, a practical course on the selection, care and feeding of houseplants, will include discussions of cacti and succulents, ferns, bromeliads, and other tropicals which are suitable for today's homes. Methods of arranging these plants in attractive, livable displays will be discussed.

Each member of the class will receive one small plant and a booklet with color plates of over 100 houseplants.

Two meetings are scheduled: Section A on Tuesday mornings, Jan. 18 and 25, from 10 to 11:30 a.m.; Section B will meet on Thursday evenings, Jan. 20 and 27, from 7 to 8:30 p.m. Instructor for both sections is Kenneth Peck.

Saturday Morning Activities, involving children, their parents, group leaders, teachers, and any persons interested in the Garden's nature study programs, are held monthly.

A Library-Herbarium Tour will be offered from 10 to 11:30 a.m. on Jan. 15. The Library is one of the finest botanical research facilities in the world, containing more than 100,000 books and other materials, including many items of interest to children and the average gardener. The Herbarium contains one of the largest collections of preserved plants in North America.

For more information and registration on educational programs, please call the Education Department at 772-7600, Extension 81.

New courses and educational programs are scheduled to begin in February, with information available later this month.

Member of
The Arts and Education
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Annual Contributions

Henry Shaw Associate	$1,000
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MISSOURI BOTANICAL GARDEN BULLETIN
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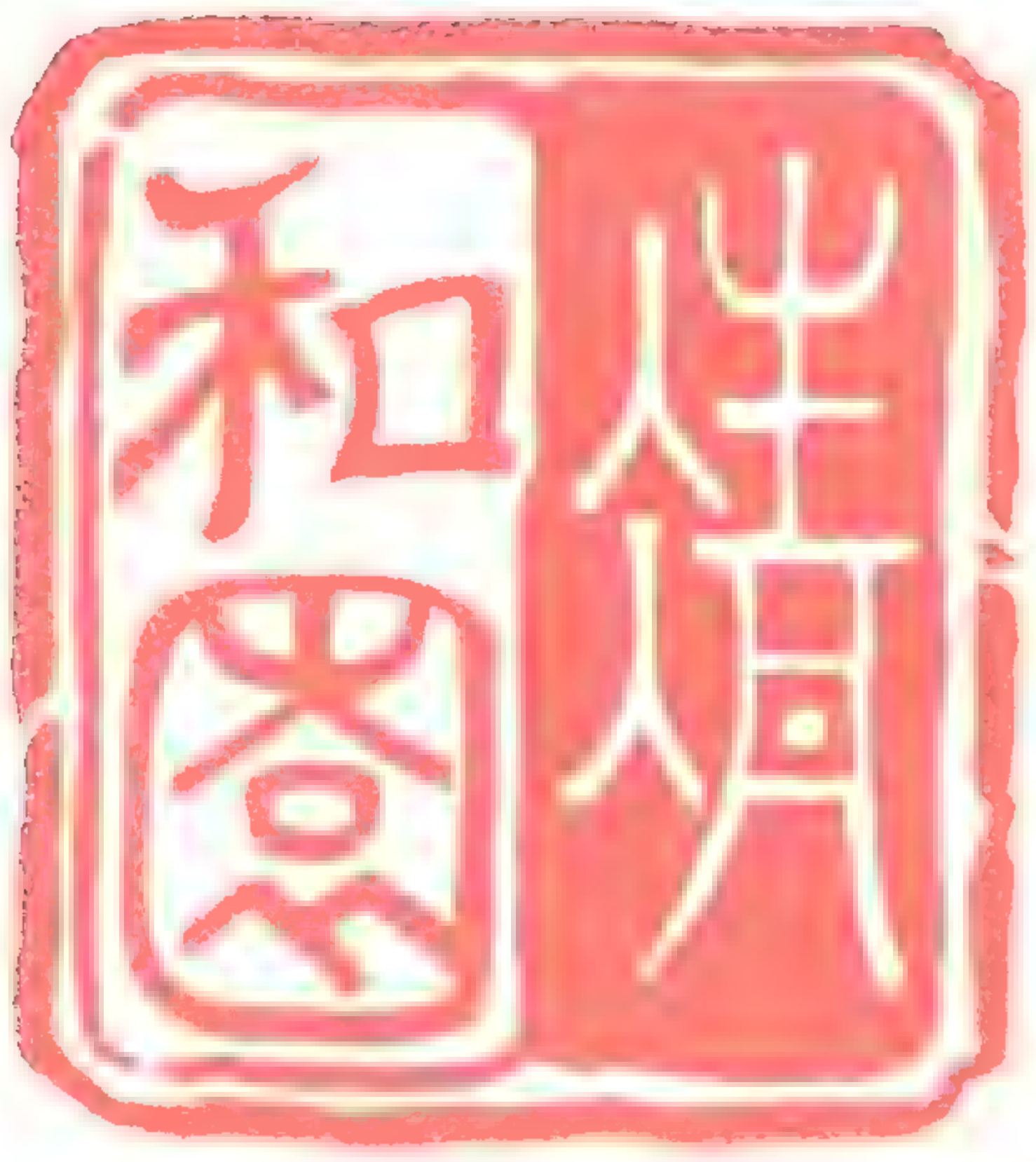


清和園 Garden of Pure, Clear Harmony and Peace

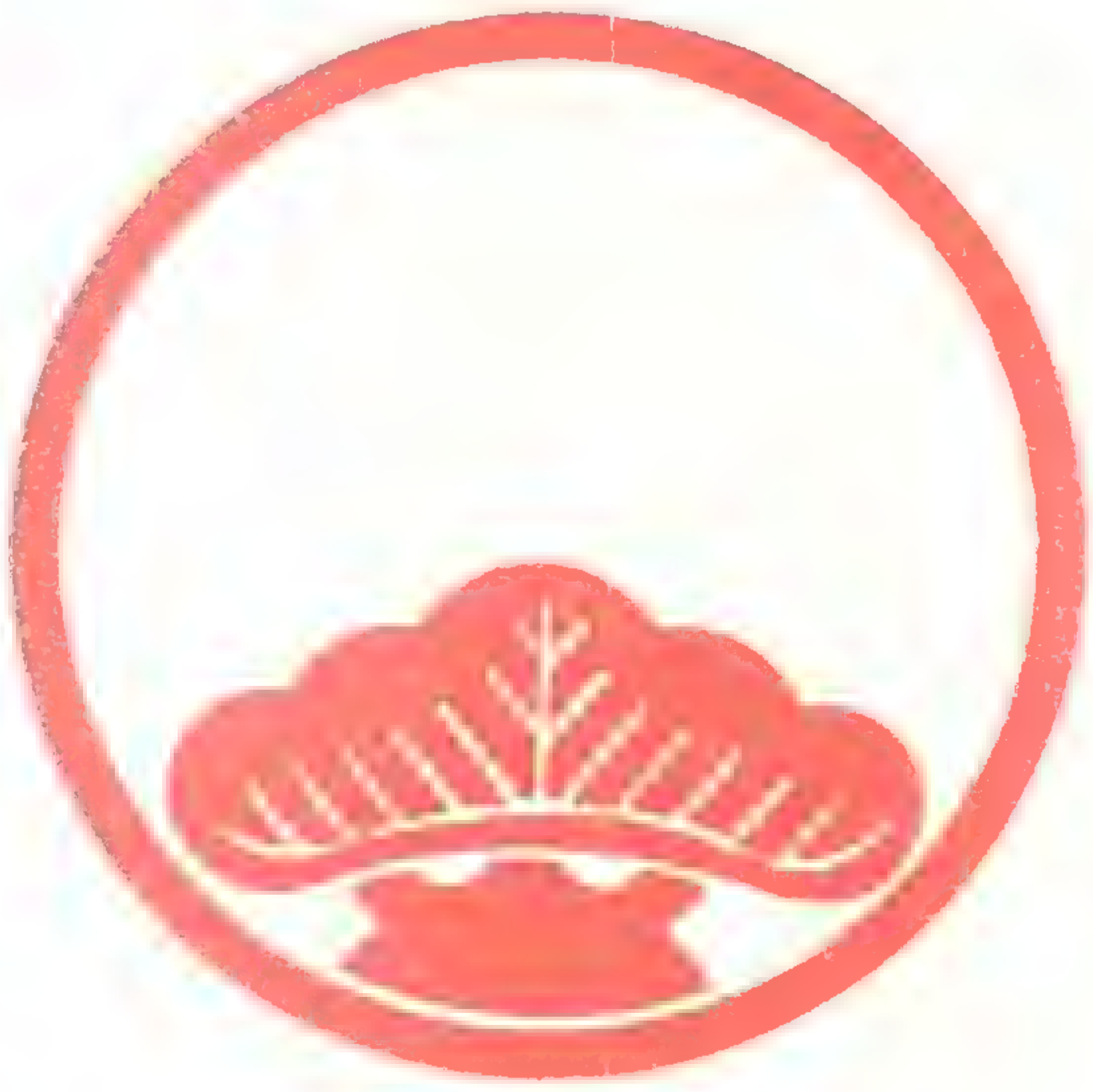
Under construction since 1974 and only three months from completion, the new Japanese Garden development has received its formal name: *Seiwa-En,* Japanese for "garden of pure, clear harmony and peace."

Prof. Koichi Kawana, professor of environmental design at UCLA and architect of the Japanese Garden, developed the name for the new garden as well as the identifying logotype which appears in this month's *Bulletin.*

"The name of the garden is *SEIWA-EN,"* Prof. Kawana wrote to Dr. Peter H. Raven, Garden director. *"Sei* is 'pure and clear,' *wa* is 'harmony and peace,' and *En* is 'park or garden.' Both *Sei* and *wa* are the most important principles of the Japanese tea ceremony which permeates all other physical and spiritual entities of Japanese culture.

"It is the virtue of man.

"The garden was created as a result of *wa* – the peaceful and harmonious efforts of the people of St. Louis and those of Japan and between man and nature."



The new garden's logotype is a form of crest depicting a pine, the essential tree in the Japanese Garden, traditionally called *tokiwa,* a word meaning "evergreen" and symbolically expressing longevity and happiness.

The garden's seal, reading *Seiwa-En* in artistic form, was also developed by Prof. Kawana and appears in this month's *Bulletin.*

The name, *Seiwa-En* in Japanese calligraphy, will be inscribed on a plaque erected in the Japanese Garden, a $1.2 million development taking shape on 12 acres of the Garden grounds and scheduled for dedication on May 5, 1977.

The plaque will also bear the names of the major contributors to the garden, which are:

- Missouri Department of Natural Resources
- Missouri Arts Council
- National Endowment for the Arts
- City of Saint Louis, Missouri
- Japan World Exposition Commemorative Fund
- Nagano Prefecture, Japan
- Suwa City, Japan
- Saint Louis – Suwa Sister Committee
- Elizabeth E. and Joseph H. Bascom
- Oliver K. and Suzanne T. Bovard
- Chemtech Industries, Inc.
- Leicester B. and Mary P. Faust
- Blanche Y. and Albert P. Greensfelder
- Elmer G. and Ernstine R. Kiefer
- A.P. and Esther M. Klose
- Priscilla B. McDonnell
- Louis T. Meyer
- Elizabeth Moore
- Laura R. and William R. Orthwein, Jr.
- Lucianna Gladney Ross
- Lois McK. Shapleigh
- Angela Sterbenz
- Hilda E. Stroh

The Japanese Garden was inspired by the St. Louis Chapter, Japanese American Citizens League.

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February 1977

THE GARDENS OF KYOTO AWAIT MEMBERS ON TOUR

The breathtaking gardens of Kyoto, ancient capital and cultural center of Japan, will be part of the itinerary for those Garden Members who plan to take advantage of the Garden's autumn tour of the Japanese countryside, scheduled for Oct. 2-22, 1977.

Five days of the three-week visit to Japan will be spent in Kyoto, which is the site of some of the most unique and historic gardens in Japan.

Tenryu-ji, a temple garden dating from 1343; the Heian Shrine erected in 1895 to commemorate the 1,100th anniversary of the founding of Kyoto; the royal garden at Katsura Rikyu, one of the most famous garden landscapes in the world — these are only three of the choice gardens open to the touring group.

Another imperial garden is Shugakiun Rikyu on the western slopes of Mount Hiei, an informal garden constructed on three different levels. The highest level provides a panoramic view of the Kyoto countryside. In addition to streams and a large lake, a distinctive feature of the Shugakiun garden is an extensive use of native Japanese maple trees, which will be viewed at the height of their autumn coloring.

One of the newest settings historically is the Murin-an, a charming Meiji period (1868-1912) "natural" style landscape, dominated by a meandering stream flowing through a grass covered meadow. This garden is totally enclosed and subtly utilizes the magnificence of the surrounding wooded Higashiyama hills.

For information on the Members' trip to Japan, please call the Members' Office at the Garden. Reservations are limited.

SPRING GARDEN WORKSHOP

The fifth annual Spring Garden Workshop will be held in the Floral Display House of the Missouri Botanical Garden on Saturday and Sunday, March 5 and 6.

New techniques in spring gardening will be discussed at the workshop, conducted by Robert Dingwall, chief horticulturist at the Garden. Many up-to-date ideas for the home garden will be presented by Bob Dingwall and other staff members at the workshop.

Plant Shop staff members will be on hand, too, to help with any problems concerning spring garden work. Be prepared to arrive with pencil and paper and depart with a world of information to get the home garden off to a good start and to produce excellent results for the year.

The hours of the workshop are 11 a.m. to 4:30 p.m. on Saturday, March 5, and noon to 4:30 p.m. on Sunday, March 6.

A mammoth Red Goose, spokesman for a shoe company, found the Garden to his liking during the recent filming of a television advertisement. The Garden setting was chosen as an ideal spot to portray spring shoe designs.

DAY CARE AVAILABLE FOR CHILDREN OF VOLUNTEERS

Mothers with young children can now volunteer their time more easily to the Garden, and be sure their small fry are well cared for.

The Garden has made special arrangements with the day care center at Tower Grove Baptist Church, on the corner of Tower Grove and Magnolia Avenues, for children of Volunteers to attend the center while their mothers are working at the Garden.

The day care facility offers a varied program of play and learning activities, lunch and rest times. Fees are reasonable, and children are accepted for half or whole days.

With the coming of spring and the completion of the Japanese Garden many more Volunteers will be needed than ever before.

For information about the Volunteer Program and the positions available, please call Carol Taxman, Chairman of Volunteers, at 772-7600, Extension 53.

The MISSOURI BOTANICAL GARDEN BULLETIN is published 12 issues per year monthly by the Missouri Botanical Garden, 2345 Tower Grove Avenue, St. Louis, Mo. 63110. Second class postage paid at St. Louis, Mo. $5.00 per year. $6.00 foreign.

Consortium Provides Input for Environmental Project

The Environmental Education Training Project, a year-long program co-sponsored by the Missouri Botanical Garden and the St. Louis Public Schools, has established a community Consortium to train teachers in the use of local environmental education resources.

The Consortium, representing more than 25 civic, cultural, environmental and educational organizations, meets at the Garden regularly to provide guidance and assistance to the project staff.

Project co-directors are Edward P. Ortleb, science supervisor for the St. Louis Public Schools; and Dr. William M. Klein, assistant director of the Garden.

Twenty city teachers are currently taking part in the project, a federally-funded program supported by a $57,876 grant from the U.S. Office of Environmental Education. The cooperative project will develop a teacher training model to help fourth-, fifth- and sixth-grade teachers assemble curriculum material from a variety of resources, and to prepare them to train other teachers.

Consortium members include the St. Louis Committee for Environmental Information; *Environment* magazine; the East-West Gateway Coordinating Council; St. Louis Art Museum; St. Louis Public Library; Cemrel; the American Lung Association; the Center for Simulation Studies; the U.S. Army Corps of Engineers; Project Values and Program on Man, Technology and Society, St. Louis University; Missouri Department of Conservation; U.S. Environmental Protection Agency; the Coalition for the Environment; the Ozark Chapter of the Sierra Club; and Washington University.

One recent consortium session was directed toward providing teachers with substantive information in four areas: pollution, transportation, plant and animal relationships, and recycling.

Participating in the session were David Bedan of the Sierra Club; Sue Rensing of the Art Museum; Prem Chand, St. Louis Park Department; Beatrice Robertson, Cahokia Mounds Museum; Jack Woodhead, Department of Conservation; David Killeen, EWGCC; Betty Broemmelsick, Soil and Water Districts Commission; Bill Darby, Washington University; Dick McMillan, Soil Conservation Service; Rocco DiLorenzo, St. Louis University; Evelyn McWilliams, Lung Association; Norm Messinger, National Park Service; Kate Rogers, Cemrel; and Gary Harvey, Coalition for the Environment.

Project managers are Peggy Rustige of the St. Louis Public Schools and Calla Smorodin of the Garden's Ecological Services Department.

Peggy Rustige: "In the formative years, the schools must be concerned with teaching children about a citizen's responsibility to the environment. Teachers must learn to view the community as an educational laboratory for the utilization of the school's intellectual, physical and natural resources."

Calla Smorodin: "The diverse interests and broad range of expertise of the Consortium participants helps to assure that our training model is multidisciplinary, multi-process and designed to help students move toward a comprehensive understanding of the environment."

The Consortium schedule includes attendance at follow-up seminars held at the Garden. Participating in one such session, held recently, were Elizabeth Robb, Committee for Environmental Information; Jack Woodhead, Department of Conservation; Richard Daley, Ecological Services, Missouri Botanical Garden; Bill Savage and Alan Donges, Soil Conservation Service; Don Clay and Deborah Bass, EWGCC; David Bedan, Coalition for the Environment; and the Sierra Club.

Members work with project teachers and staff to help them develop curriculum units. Here, left to right, Consortium member, Don Clay, East-West Gateway Coordinating Council; Calla Smorodin, Project Manager for the Garden; Project teachers Eunice Spratt, Leon Smith and Minnie Tillman, with Peggy Rustige, Project Manager for St. Louis Public Schools, go over ideas.

Garden Visitors

During a recent Garden visit by students from the Missouri School for the Blind, two young girls use the sense of touch to experience a plant in the Desert House.

Members of the National Middle School Association tour the Desert House with Volunteer Guide Miss Mary Elizabeth Bascom. The teachers from all over the United States were taking part in the group's 1976 Annual Conference held in St. Louis.

A surrey with the appropriate fringe on top, the newest vehicle for Trustees' tours of the Garden, was presented to the Board of Trustees recently by John G. Buettner, president of Shipping Utilities, Inc., manufacturers of the surrey and other mechanical devices; and Mrs. Dwight W. Coultas, president of the Executive Board of the Members. Surrey-riding, from left, are Trustees Howard F. Baer and C. Powell Whitehead; Mr. Buettner; Daniel L. Schlafly; Tom K. Smith Jr., president of the Board of Trustees; and Mrs. Coultas. Standing at right is Dr. Peter H. Raven, Garden Director.

LECTURE SERIES SCHEDULED

A Spring Lecture Series, scheduled for March and April in the John S. Lehmann Building, will focus on yesterday, today and tomorrow at the Missouri Botanical Garden.

The schedule, "Our Garden Through The Years":

March 9 — "Henry Shaw; Reflections on Our Founder," James Reed, Garden librarian currently at work on a Shaw biography.

March 16 — "Scientific Research at Missouri Botanical Garden," Dr. Peter H. Raven, Garden director.

March 23 — "A View from the Summit," the Arboretum, 2,200 acres at Gray Summit, David Goudy, Arboretum superintendent.

March 30 — "Missouri Botanical Garden: A Blueprint for the Future," Dr. Peter H. Raven.

April — A series of films and an exhibition of botanical prints are scheduled.

The March lecture sessions will be held at 10:30 a.m. and 8 p.m. in the Lehmann Building auditorium.

GARDEN GATE VOLUNTEERS EXPLORE EASTERN MARKETS

The globe-trotting volunteer buyers for the Garden Gate Shop, dedicated to maintaining the uniqueness of gift opportunities at the Missouri Botanical Garden, headed East for five January days to scout faraway markets for exciting spring items.

Jan. 9 through 13, the volunteers visited the Atlantic City Glass and China Show and travelled to New York City to inspect items available at the Gift Market there.

One immediate result: a sale; with inventory taken on the snowiest day of a snowy January, the shop has announced a clearance sale of one-of-a-kind items, drastically reduced in price to make room for the fresh spring look.

MEMBERS TO GO WEST

For nine days next June, Garden members will have the chance to head West, tread the Rim of the Rockies and experience the awesome beauty of those magnificent Canadian sunsets.

A special tour for members has been scheduled June 12-20 through the scenic grandeur of the Canadian Rocky Mountains, including visits to Banff, Lake Louise, Jasper Park and the "Going to the Sun" Highway across the Continental Divide.

The trip will offer a unique opportunity to observe the spectacular Alpine flora of the continental Northwest. For additional information, contact the Members' Office at the Garden.

WATERCOLOR EXHIBIT TO OPEN IN FEBRUARY

A collection of some 30 watercolor paintings by Carol Bolt, nationally known artist and art tutor, will be on display in the lobby of the John S. Lehmann Building from Feb. 22 through March 25.

Garden Members and their guests are invited to attend the opening of Ms. Bolt's showing, from 7:30 to 9:30 p.m. on Monday, Feb. 21.

Ms. Bolt, a native New Yorker, has exhibited her work in galleries on Long Island, in Chicago, in London, and at the Norton Gallery in St. Louis. She holds a Bachelor of Fine Arts degree from Chouinard-California Institute of Arts in Los Angeles, and has tutored art students in addition to doing free-lance work. Her work has been reproduced in national advertisements and in *Scholastic Magazine,* a publication with a large youth audience. At present she is employed as a graphic designer for Edison Brothers Company.

Regular exhibit hours will be from 9 a.m. to 5 p.m., Monday through Friday. The watercolors in the exhibit will be for sale. Persons interested in purchasing one or more of these paintings should contact the library staff.

SPRING PREVIEW PARTY SET

Garden Members and their guests are invited to attend a preview party for the Spring Flower Show, scheduled for 5 to 7:30 p.m. Friday, March 18, in the Floral Display House.

The party is co-sponsored by Lilly Pulitzer of St. Louis and Eagle-Marine Industries, Inc.

CAMELOT LECTURE SCHEDULED

Spring gardening will be the theme of a Camelot lecture by Robert Dingwall, the Garden's chief horticulturist, scheduled for 1 p.m. Monday, Feb. 28, at the Signal Hill Methodist Church in Belleville, Ill.

Last October, the lecture was sold to the Signal Hill Gardeners at the Annual Camelot Auction, conducted by Channel 9 for the benefit of member organizations of the Arts and Education Council of Greater St. Louis.

The Missouri Botanical Garden is a council member.

In addition, four house calls by the "plant doctor" were donated to the auction. Dr. Dingwall made two such calls last fall and will complete the remaining two in the spring.

A second Camelot lecture, by John Elsley, curator of hardy plants, was donated to the auction and was purchased by the Webster Groves Garden Club.

The Orchid: *A Bloom of Uncomm*

One of America's favorite flavors — vanilla, it's called — can be found in cookies, cakes, yogurt, pudding and milk shakes; it's used in tobacco, soap, perfumes, medicines and liqueurs; and it accounts for nearly half of all the ice cream sold in the United States.

But where does it come from?

You guessed it: genuine vanilla comes from an orchid. It's called *Vanilla Planifolia* in botanical circles and is native to southeastern Mexico, the West Indies, Central America and northern South America. It was used by the Aztecs of Mexico to flavor their cocoa long before Europeans discovered America. The earliest known reference to it is from an illustration in the Badianus Manuscript, an Aztec Herbal of 1552. The Aztecs called it "Tlilxochitl," meaning "Black Flower," which probably refers to the color of the cured fruit capsule, the source of vanilla flavoring. The common name in English, as well as the scientific name, comes from the Spanish word "Vainilla" which is the diminutive of the word for a pod.

Why is genuine vanilla so expensive? Because its production is an elaborate, time-consuming process requiring much hand-labor and several months to complete. Unripened fruit capsules (often erroneously called "beans" which are the fruits of an entirely different plant family) must be picked at a specific point in their development and cured by a complex process in order for the seeds and surrounding tissue to develop the proper flavor and aroma. This entire process has been little improved over that developed by the ancient Aztecs except in the early part of the 19th century when Edmund Albius, a former slave, perfected a method of artificial pollination which made vanilla production a practical commercial venture.

In 1950, world production of vanilla was about three million pounds, with Madagascar producing over one-half and Mexico about one-fourth of the total world crop. Vanilla is also grown commercially in Tahiti, Reunion, Dominica, Indonesia, the French West Indies, the Seychelles and Puerto Rico. Vanillin, a commercial synthetic manufactured from petroleum and papermill wastes, now rivals the production of true vanilla.

Come and see (and smell) the Vanilla Orchid at the Climatron Orchid Show, Feb. 5 through Mar. 13.

WHERE DOES THIS FLOWER GROW?

On every continent of the world except Antarctica, in any habitat not occupied by permanent ice or standing water, the orchid can be found growing and propagating and going about its aromatic business.

Even in the tropics, where orchids are most abundant, they can be found in a variety of habitats not usually considered tropical. In Africa, for example, orchids can be found in mangrove swamps, sand dunes, grasslands, savannahs, bushlands and meadows, as well as forest and jungle.

However, orchids do grow in the greatest numbers and diversity in cloud forest or mountain forest associations in the tropics. Some tropical countries, such as Costa Rica or Ecuador, may each be the habitat of some 2,000 different species of orchid.

In all of North America, there are only about 200 orchid species.

A LARGE FAMILY

According to botanical estimates, about one out of every 10 flowering plants in the world is an orchid. The number of natural species of this flower, worldwide, is believed to range from 15,000 to 35,000. And even though there may be more individual plants belonging to the sunflower and grass families, the orchid family is the largest of all in number of species.

n Good Taste

A MOONFLOWER

Do orchids bloom in the moonlight? Wherever they bloom, in North American woodlands, Mexican highlands, tropic lowlands, their floral life is unmitigated by the moon, as can be seen this month in the Climatron, the home away from home for hundreds of orchids from around the world.

Neither moon, nor gloom, nor dark of night lessens the exquisite beauty of these dainty, fragile and intricately-formed flowers. Once in bloom, they stay in bloom for several weeks.

TAKE HOME A "STAR"

Ludisa (Haemaria) *discolor,* a terrestrial Burmese "jewel" orchid of particular merit for use in terrariums and bottle gardens, will be a "star" among the many orchids featured in the Plant Shop during February's Orchid Show. Cypripediums from the Garden's collection, miniature cymbidiums, laelia, phalaenopsis, and numerous other species and hybrid orchids will be offered for sale during the shop's regular business hours: 9 to 4:30 daily.

Particular care has been given to select plants with the "beginner" in mind. Specific cultural information will be given with each plant.

Experience the Climatron during this exceptional event and let the Plant Shop provide you with a living memory of the day.

WHERE TO READ ALL ABOUT IT!

With the Garden's Orchid Show scheduled to burst into bloom on Feb. 5, interest in this exotic flower is at a high level. The following is a list of general reference works on the orchid and its culture. All are available for Garden Members' use at the Library in the John S. Lehmann Building, and are for sale at the Garden Gate Shop.

The Biology of Orchids, by C. H. Dodson and R. J. Gillespie. (Mid-American Orchid Congress, Inc., 1967).

Home Orchid Growing; third edition, by R. Y. Northern. (Van Nostrand Reinhold Co., 1970).

A History of The Orchid, by M. A. Reinikka. (University of Miami Press, 1972).

Orchids, by F. S. Shuttleworth, H. S. Zim and G. W. Dillon. (Golden Press, 1970).

The Orchids; A Scientific Survey, by C. L. Withner, Editor. (Ronald Press, 1959).

The Orchids; Scientific Studies by C. W. Withner, Editor. (John Wiley & Sons, 1974).

Nell C. Horner
A Personal Memory

Nell Horner's death, at the age of 87 on September 6, 1976, brought an era to a close at the Missouri Botanical Garden. Nell was a native Missourian, born in Columbia, where she was buried. The family moved to St. Louis when she was a small child and she remembered the Garden then as a pretty place to visit, with its formal English style flower beds. She attended Washington University and maintained close contact with her university friends afterward.

In September, 1919, Nell came to the Garden as an assistant to Jacob R. Schramm, assistant director and editor of the *Annals.* Proof-reading and botany were strange new fields for her, but her major at Washington University in Latin and English had given her a language background. By 1920 she was Editor of Publications, with responsibility for both the *Bulletin* and the *Annals.*

Articles in the *Bulletin* were seldom signed, but Nell was the author of many of them. In 1925 she was given the additional title, one that she held until 1957, of Librarian and Editor of Publications.

Nell Horner, right, in an early photograph, along with, from left, Ed Evinger, graduate student at the time but later in charge of the experimental greenhouse; and Mildred E. Mathias, currently Emeritus Professor of Botany at UCLA.

The quality of the *Annals* over the years was in part due to her conscientious editing. It was a common sight to see her leave the office at five o'clock with an armload of manuscripts or proofs as homework. Her editorial ability and her knowledge of Latin were invaluable to students and staff in the preparation of papers, not only for the *Annals* but for other journals. She had a gentle way of calling attention to a bad style or a grammatical error. Her extensive knowledge of the literature of botany was particularly helpful in picking up errors in citations.

For many years Nell's desk was in the reading room where she was readily accessible to students, serving as a resource person as well as a sympathetic sounding board for their problems.

One of my first memories of Nell was a discussion with her of old age when she informed me that anyone past 35 could no longer function in this society and should consider suicide. As a young undergraduate I had little reason to question such wisdom, but I now realize that she had just passed that critical age and perhaps felt "over the hill." She need not have worried since her rapport with students was such that age was of little consequence.

Nell attended most of the students' parties and entertained them often with elegant buffets in a charming southern home filled with antique furniture and further adorned by her father, an antebellum formal gentleman always referred to by the family as Mr. Horner, and her mother, a delightful petite southern belle who was still writing poetry in her nineties. It was an introduction to another world for many a graduate student.

In 1930, Nell joined C. Leo Hitchcock and George Goodman, then both graduate students at the Garden, on part of their collecting trip through the southwestern United States. I suspect that this was her sole contract with field work and it gave her further appreciation of student activities.

In 1957 Nell became Bibliographer and Editor at the Garden, but the following year left the Garden to join the library staff of the St. Louis University School of Medicine, where she worked until retirement. However, she maintained her many personal associations with the Garden and when the Alumni of the Missouri Botanical Garden was organized, Nell became the only honorary member. Her home in St. Louis was a mecca for former students, a place where one was brought up-to-date and where we were reinfected with the zest for life that Nell always displayed.

— Mildred E. Mathias
Emeritus Professor of Botany, UCLA

Tower Grove House Visitors

They come in all sizes, shapes and ages; hailing from nearby or far away; representing scout troops or civic groups or school classes; their interests ranging from history to architecture to interior decorating to tourism.

In the year ending last Oct. 1, nearly 27,000 of them came to the Missouri Botanical Garden, to tour the Victorian elegance of Tower Grove House.

Visitors to Tower Grove House averaged 2,500 per month during the year ending Oct. 1, with the greatest number of visitors reported during the late spring and summer months. The highest single month during the year was May, with a total of 3,594 visitors touring the Victorian home. The lowest months, traditionally, are January and February, but 1,820 visitors toured the home during February of 1976.

Group rates and schedules are available for tours of Tower Grove House, currently under restoration to replicate as nearly as possible the state of the home when Henry Shaw lived there more than a century ago.

Dudley French

It was appropriate that Dudley French's last outing, four months before his death at the age of 89, was a visit to the Missouri Botanical Garden, an institution which has benefited greatly from the efforts and energies of this remarkable St. Louisan.

Mr. French, a member of the Garden's Board of Trustees for more than 20 years and its first Honorary Trustee, died last October following a lengthy illness.

It was in June, a year and a half after he had become ill, that Mr. French was brought to the Garden by his daughter, Mrs. Alden Blodget Jr., for what proved to be his final outing. Although confined to a wheelchair, Mr. French was able to tour the developing Japanese Garden with Dr. Peter H. Raven, Garden director, and Mrs. Raven.

It was appropriate also that Mr. French was able to view the Japanese Garden, this promise of future growth, because he was a man who had served as one of the most ardent and devoted Garden supporters in the history of the institution.

After that visit, Mr. French returned to his home at the Gatesworth Manor and during his remaining months, the one subject that would stimulate him to easy memory and conversation was the Garden. He loved to talk about the Garden, as he had always loved to serve the Garden in earlier years.

Mr. French served as a member of the Board of Trustees from 1937 to 1959 and was largely responsible for establishing the Friends of the Garden, forerunner of today's extensive Members' organization.

After he retired from board service, Mr. French was honored at a Trustees luncheon held in March, 1960. Chairman of the Board, Robert Brookings Smith, praised Mr. French's "invaluable efforts" on behalf of the Garden, which had been "in the finest tradition of Henry Shaw — a tradition of devoted service to science and to the public."

At that time Mr. French was presented with an engraved silver pitcher in recognition of his service to the Garden, and was named the first Honorary Trustee of the Missouri Botanical Garden.

A special plaque in his memory, acknowledging Mr. French's unique contributions to the Garden, has been authorized by the present Board of Trustees and will hang in the Members' lounge. Others who were associated with Mr. French in Garden affairs during those years have remembered his charm, his gentleness and his humor.

The Garden's two other Honorary Trustees, Leicester Busch Faust and Henry H. Hitchcock, have recalled the delight with which Dudley French would bring visitors to the Garden. He was constantly introducing new people to the Garden — his friends, out of town visitors, and St. Louisans who were unfamiliar with the Garden and its capacity to provide unique enjoyment and pleasure.

Although the Garden was his most enduring commitment, Mr. French had many other community interests. A former vice-president of Graham Paper Company, he was active in United Fund campaigns and was a former president of the St. Louis Children's Aid Society, later the Family and Children's Service of Greater St. Louis, Inc., of which he also served as president and board member. He was also a president of the St. Louis Branch of the English Speaking Union. His wife, the former Grace Allen, died in 1970. In addition to his daughter, Louise French Blodget, of Princeton, N. J., he is survived by a brother, Charles French of Kansas.

Hortus Third at Garden Gate Shop

The new Hortus Third, an authoritative and comprehensive book dealing with thousands of plants which are grown in North America, has replaced Hortus Second and is currently available in the Garden Gate Shop of the Missouri Botanical Garden.

The book is a major update of Hortus Second, familiar to many American gardeners as the best listing of plants in cultivation.

Coming more than 35 years after its predecessor, Hortus Third has nearly 24,000 entries, more than 1,300 pages and is illustrated with line drawings. The book includes information on species, varieties, cultivars and forms, and each entry includes a description of the plant with range, cultivation, propagation and hardiness. Both common and Latin names are given.

In addition, the book contains a glossary and a list of authors of plant names.

Published by Macmillan, Hortus Third was prepared by the staff of the L.H. Bailey Hortorium at Cornell University, a center for the study of cultivated plants. The selling price of $99.50 works out to about seven cents per page — a reasonable rate at current book prices.

As a gift, a tool of the trade or a treasure for anyone who works or plays with plants, Hortus Third comes with high recommendations.

— W.G. D'Arcy
Department of Botany

THE INTEMPERATE SEASON

Late fall and early winter have brought below-normal temperatures to most of the Midwest. The previous lack of moisture, coupled with continued dry conditions and severe cold, could result in considerable damage to plants.

It is important, when the ground thaws, to get out and water heavily. We recall that a year ago, February was very dry and this condition continued throughout the summer season. Therefore, I urge all gardeners to water heavily at this time of year, so that if we continue to experience cold frost, the plants will have sufficient moisture to maintain them in good condition.

Seed orders should be placed with emphasis on hybrid plants and disease-resistant varieties. A number of new vegetables, which are disease resistant and proven hardy in this area, are available. Plan to attend the Garden's March Workshop to learn new techniques for your garden for the coming year. This is a very worthwhile program at the Garden and one from which all members can obtain a great deal of information.

DORMANT OIL SPRAY

February is the month to apply dormant oil spray when temperatures are above 40 degrees for at least 24 hours. This should be applied liberally to all parts of the plant at the same time. It is not harmful to animals or birds and it is one of the most economical and safe sprays that can be applied to garden areas.

Many new varieties of plants and vegetables are available for patio and apartment gardening. Check seed lists and horticulture information for varieties particularly recommended for container growing. New soilless media, both light weight and weed free, are available from most garden centers and make ideal media for plant growth.

FLOWER SELECTION

Select flowers that can take the heat during the summer months. Much can be done to keep plants in good condition by having mulches applied, to help control the soil temperatures and keep them somewhat cooler than air temperatures. Extremely heat-resistant flowers suitable for this area are: Amaranthus — especially Amaranthus tri-color called 'Joseph's Coat'; Canna's in various colors; Creeping Zinnia; Sanvitalia procumbens; Gloriosa Daisies and other species and hybrids of Rudbeckia; Madagascar Periwinkle or Vinca Rosea, as it's called; Sunflowers; Zinnias — narrow leafed drought resistant kinds such as Classic and Mexican Zinnias; Celosia Cockscomb; Cleome or 'Spider' Flowers; Geraniums. Much work has been done in growing from seed new geraniums which are very compact, very free flowering, and standing up extremely well under St. Louis conditions. Strawflowers and Marigolds in various giant hybrids and tetraploids are available; Portulaca, or 'Moss Rose'; Salvia in red, white and blue; Verbenas are low, constantly blooming, and come in multitudes of colors.

For the shaded gardens: Fibrous Begonias, Browallia, Coleus, Impatiens, Caladiums all do extremely well.

STARTING VEGETABLES

Plan to start annuals and vegetables six to eight weeks before transplanting outside. Seeds started indoors under artificial light and allowed to harden off two weeks prior to planting out give an early start.

Cool crops should be planted out during the mild periods in February and early March so that they mature before the hot weather sets in.

Orders for roses and other trees and shrubs should be placed immediately so that they will be delivered at the proper planting time.

In making gardens plans now, it is important to consider ease of maintenance during the summer months. Refer to earlier Bulletins for further information on what to do in February.

— Robert J. Dingwall
Chief Horticulturist

EDUCATION DEPARTMENT SETS COURSE(S) FOR SPRING

One of the first heralds of spring — new adult education courses designed to prepare the gardener for a greener season — will begin at the Garden in mid-February and continue through March 16.

Principles of Budding and Grafting, including demonstrations of common techniques helpful to the home gardener, will be the subjects of a one-session course scheduled for Thursday, Feb. 17. The session will be held from 7:30 to 10 p.m. in the John S. Lehmann Building, with James I. McCaskill as instructor. Registration fee for Garden members is $6.

In addition, a course in vegetable gardening for city dwellers and suburbanites will be offered beginning Wednesday, March 2, and continuing each Wednesday night through March 16. Each of the three sessions will be held from 7 to 8:30 p.m. in the Lehmann Building, with Stephen Wolff as instructor.

During the course, those interested in growing food for the table will learn about site selection, soil preparation, selecting seeds and disease and insect control. Demonstrations will include seed sowing, seedling transplantings, special planters and miniature vegetables and herbs. Each student will receive a textbook.

The registration fee for members is $10.

Students may register for the new courses by telephoning the Garden's Education Department at 772-7600.

MEMBERSHIP CATEGORIES
Annual Contributions

Henry Shaw Associate	$1,000
Director's Associate	$ 500
Sponsoring Member	$ 250
Sustaining Member	$ 100
Contributing Member	$ 50
Annual Member	$ 25

Contributions are tax deductible for income tax purposes in the manner and to the extent provided by law.

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December 1976

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MISSOURI BOTANICAL GARDEN BULLETIN
2345 Tower Grove Avenue
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Missouri Botanical Garden Bulletin

Garden Is Subject of Landmark Decision

The Missouri Botanical Garden, rich in history as well as in science and natural beauty, has become one of only seven St. Louis area sites to be officially designated a National Historic Landmark by the federal government.

Gary Everhardt, director of the National Park Service of the U.S. Department of the Interior, announced the decision and noted that the Garden "has been found to possess national significance in commemorating the history of the United States."

The purpose of the landmark designation, Everhardt said, is to recognize nationally significant sites and to encourage their owners to preserve them. Landmarks are chosen through studies prepared by the National Survey of Historic Sites and Buildings; evaluated by the Advisory Board on National Parks, Historic Sites, Buildings and Monuments; and approved by the Secretary of the Interior in accordance with the Historic Sites Act of 1935.

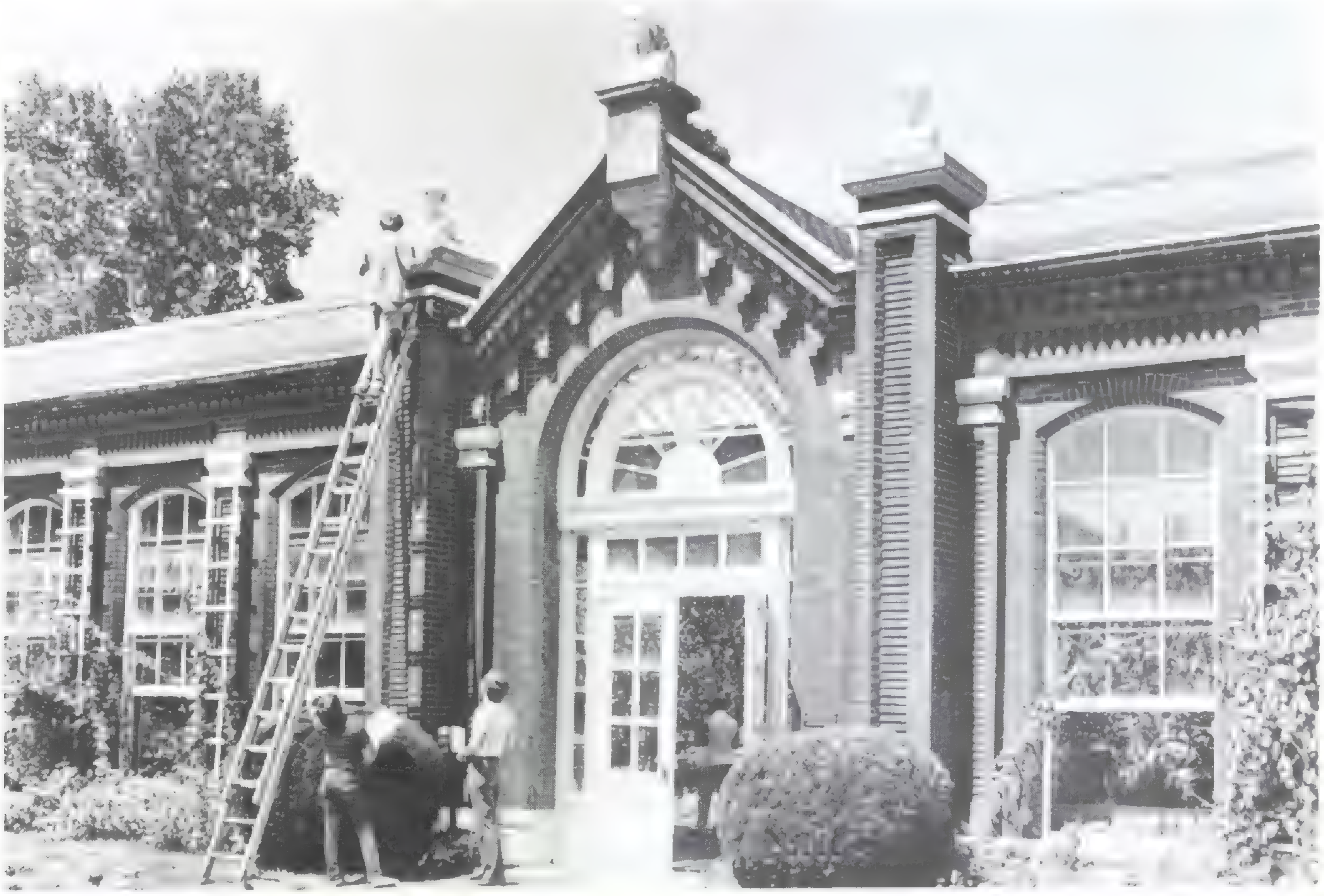
The Garden is already enrolled on the National Register of Historic Places. Under the provisions of the National Historic Preservation Act of 1966, entry to the Register provides safeguards against damage by federal undertakings and fulfills one qualification for participation in a grant-in-aid program to assist in Garden preservation.

Dr. Peter H. Raven, Garden director, noted that the Landmark designation represents official recognition of the original intentions of the Garden's founder, Henry Shaw.

"In his will," said Dr. Raven, "Mr. Shaw asked that the property be conveyed to a body of public Trustees in order to preserve the Garden for public use, 'forever kept up and maintained'. Our ongoing effort to preserve and improve the Garden closely parallels the purposes and objects of the National Landmark designation."

Prior to the designation, a 10-page inventory and

[Continued on Page 2]



To prepare a report on the Garden's nomination as a National Historic Landmark, a team from the Historic American Buildings Survey examines the Linnaean House, right. Upper right, the shield of the National Park Service, Landmark designating agency.

Volume LXV Number 3
March 1977

LANDMARK DECISION . . . *[Continued from Page 1]*

nomination form was prepared by a National Park Service historian. It summarizes the history and scientific and social contributions the Garden has made during its more than 100 years of existence, and concludes:

"The Missouri Botanical Garden's physical environment, its library and herbarium, and its programs and publications document the historical development of botany in the United States from the middle of the 19th Century to the present. From Henry Shaw's restored 1849 Tower Grove House to the 1960 Buckminster Fuller inspired Climatron, the Missouri Botanical Garden reflects a 175-year tradition of American scientific concern for the world of plants and man's relationship to them."

Spring Solicitation Drive

In an effort to enlarge its membership, the Garden will soon be sending letters of membership solicitation to various individuals and groups in the St. Louis area. Because such letters may inadvertently go to persons already Garden Members, Dr. Peter H. Raven, Garden director, will write to each Member to explain the procedure.

"We want to let the members know in advance," Dr. Raven said, "that this might happen, and to explain that it would be extremely costly to remove the names of Garden Members from each of the many different lists we will be using. Knowing that in advance, I hope the Members will understand should they receive one of our solicitation letters."

Dr. Raven has asked those Members receiving the letters to support the solicitation campaign by passing the letter to a friend, relative or neighbor who is not a Member.

Chicago Flower Show

Garden volunteers can see one of the top amateur and professional flower shows in the country — the Chicago Flower Show, at McCormick Place in Chicago — on a special bus trip arranged for March 30 and 31.

The Chicago Flower Show offers a combined display of amateur and commercial exhibits showing many of the newest flowers and bulbs available to the public for the first time. It offers the chance to see exciting exhibits arranged in attractive landscape designs, floral arrangements, and specimen exhibits to give a wide range of ideas to amateurs and professionals alike.

Tour horticultural guide is Robert Dingwall, chief horticulturist for the Garden. The group will stay at the McCormick Inn, across the street from the show. A special trip to the Chicago Art Institute is also on the agenda.

For more information, please call the Education Department, 772-7600.

Arboretum Branches Out

The Shaw Arboretum, the Missouri Botanical Garden's 2,200-acre nature preserve in Gray Summit, Mo., has been enlarged to include the 220-acre Freund Property, a tract of land purchased and to be developed through the generosity of Garden friends.

David Goudy, Arboretum superintendent, said the land and an educational building on the property will be named for Mrs. Adlyne Freund, whose generosity helped make the purchase possible.

Assisting in the development of the property, including the building and an interpretive wild flower trail, are Mr. and Mrs. Whitney Harris and their son, Eugene Harris.

Mrs. Adlyne Freund, right, with Mr. and Mrs. Whitney Harris.

The property, adjacent to the existing Arboretum land, consists of 220 acres of woodland, meadow and a small portion of agricultural acreage. It includes more than a mile of Meramec River frontage with bluffs overlooking the river valley, as well as about a mile of frontage on Brush Creek, an important local tributary of the Meramec.

The State of Missouri was able to assist in the purchase by earmarking federal matching funds to pay the Garden for a conservation easement on the property. To be eligible for such matching funds, the Garden agreed to a deed restriction limiting development or use of the property which would be detrimental to its essentially natural features.

A lodge building on the property, extremely rustic and constructed of native stone and wood, will be developed for use in special educational programs, including seminars, teacher workshops and meetings.

The land and building will be dedicated in ceremonies to be held this spring, Goudy said.

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Dr. Thomas Croat, Collector

There are those who mistakenly think of the Herbarium in the John S. Lehmann Building as a place to store parsley, sage, rosemary and thyme. Garden Members and scientists know that the Herbarium houses more than 2.5 million dead, dried, flattened plant specimens from all over the world, in some 47,000 small dark pigeon holes. Many of these specimens are there as a result of the collecting activities of Dr. Thomas Croat, Associate Curator in the Botany Department for the past ten years.

But a visit to Dr. Croat's office, located just off the main Herbarium storage area, is more like a trip to a tropical greenhouse than a museum curator's quarters. The visitor is surrounded by the shiny dark green foliage of dozens of "living" plants of the aroid family (Araceae).

Dr. Croat has begun an intensive study of the 200 or more Central American species of *Anthurium,* the largest genus of the aroid family, and he recently collected many of his "office plants" as part of that study.

Extensive field work is crucial to a proper understanding of *Anthurium* for several reasons, explained Dr. Croat. Existing herbarium specimens are few, often incomplete, and poorly documented. More, certain characteristics of the plants can only be studied in natural surroundings. Other information can be obtained from greenhouse-grown plants, but few well documented greenhouse collections exist.

In 1976, Dr. Croat spent eight months in Panama and Costa Rica, collecting over 1500 herbarium collections of Araceae. Most of these were *Anthurium.* But because of the special problems involved with studying *Anthurium,* these are no ordinary herbarium specimens.

The succulent nature of many *Anthurium* species make them particularly difficult to dry. To solve this problem, Dr. Croat designed a portable drying unit, heated by propane gas, which he can transport to the collecting areas as part of a specially-built four-wheel drive vehicle. This equipment makes it possible to collect and dry plants in remote, interesting, and normally inaccessible areas.

To fully understand *Anthurium,* it is necessary to know what the plants look like in three dimensions, so Dr. Croat photographs each collection in black and white, and often in color, before the specimens are dried and pressed. He also makes extensive field notes on each plant.

Back at the Herbarium, the notes are incorporated into labels, which are mounted together with the photographs and dried plants on special paper for storage in the Herbarium pigeon holes.

For complete documentation, the collector must see each species in flower, but many of the plants Dr. Croat encountered in the field in 1976 were not flowering, so more than 1200 living collections were made and shipped to St. Louis for additional study. Fortunately, species of *Anthurium* travel well and lend themselves to transfer from the tropics. Most are epiphytic — obtain their nourishment from moisture and air — and can be uprooted without being disturbed, withstanding the sometimes harsh treatment of international air freight handling. One shipment was two months in transit, yet a few plants survived and are now growing at the Garden.

Dr. Thomas Croat.

The Anthuriums recovered quickly from their international flight and many are now flowering in the Garden's greenhouses and in Dr. Croat's office. Observations made during the flowering period of these plants will be incorporated into the published monograph of *Anthurium,* which is the primary goal of the project.

Though the living collections are being used initially to gain a better understanding of the taxonomy of *Anthurium,* they will also be screened for the horticultural potential and to improve the Garden's collection of living Araceae.

The ease with which Dr. Croat grows many of them in his office augurs well for their eventual introduction into our homes. Those which cannot withstand the rigorous life of house plants may still do well under the more careful care of the Garden's Horticulture Department.

The material sent back in 1976 and during future trips will establish the Garden's collection of living aroids as the most extensive in the world. Many of the species are new to science and a substantial proportion are cultivated nowhere else.

Dr. Croat is now both studying the collections made during 1976 and preparing for additional work this summer. He plans to concentrate this time in southern Mexico and the countries of northern Central America — Guatemala, El Salvador, Honduras and Nicaragua.

Gardening From Ground Up!

To those who are interested in down-to-earth gardening but aren't quite sure whether they'll emerge with green thumbs or just dirty hands: take heart!

In March and April, the Garden's Education Department will sponsor a five-session course in basic gardening called "Gardening from the Ground Up." The course is an introduction to essential gardening skills and procedures for the beginner, and will cover the sowing of seeds, transplanting of seedlings and the use of sprays and fertilizers.

All seeds, growing media and flats will be provided by the Garden, and students will be given about 250 seedlings of flowers and vegetables to take home. Instructors for the course are Kenneth Peck, head of the Education Department, and Charles Tubesing.

To serve Garden Members and others, two course sections have been scheduled: Section A will meet from 1 to 2:30 p.m. on successive Tuesdays, from March 22 through April 19; Section B will meet from 7 to 8:30 p.m. on successive Thursdays, March 24 through April 21.

Registration for Section B is filled, but those interested in attending the Section A course may register by telephoning the Education Department at 772-7600. The registration fee for Garden Members is $16.

Calling All Volunteers!

Ninety of the Garden's generous volunteers have agreed to contribute their time to telephone duty at the Arts and Education Phonathon, scheduled for the first 11 days of March and held to raise funds for the Arts and Education Council.

Call-in periods for the Garden are 9:30 to 11 a.m. on Wednesday, March 2; Friday, March 4; and Monday, March 7. Headquarters is the Community Room of Plaza Frontenac, near the south end of the mall at Lindbergh boulevard and Clayton road. Twenty Garden volunteers will solicit pledges at each telephone session and 10 others will be on hand to handle back-up duties and paper work accounts. Thirty will be on hand each of the three mornings for St. Louis "Celebration of the Arts."

The Missouri Botanical Garden is a funded member of the Arts and Education Council, which provides needed financial support for many Garden programs and activities.

Spring Rose Workshop

A Spring Rose workshop will be held on March 28, 31 and April 4 from 10 a.m. until noon in the rose gardens at the Missouri Botanical Garden. A demonstration on how and why to prune, how to spray and improve your soil for top quality rose bloom this season will be conducted by Robert Dingwall, chief horticulturist, assisted by Ben Hill and Al Saxdal, rose experts.

Ground Breaking at Stix School

The eighth grade at Stix School will be "breaking ground" at the school for a vegetable garden on March 4, under the supervision of the education staff from the Missouri Botanical Garden.

Students at Stix School, from the fourth through the eighth grade, are involved in the Investigative Learning Center at the school, the Magnet School program co-sponsored by the St. Louis Public Schools and the Garden.

While the eighth graders will be planting their "home grown" vegetables, other Stix children are taking part in other plant investigation activities during March, ranging from a puppet show on growing trees to a mapping of Tower Grove Park.

Fourth graders will be at the Garden March 16 for a Spring New Growth Hunt, with a follow-up spring activity in their classroom the next day.

March activities for fifth graders include seeing the puppet show, "The Green Machine," at the Garden, which demonstrates how trees grow. They also will be sowing seeds and discussing photosynthesis in their classrooms and mapping an area of the Garden.

Sixth grade students will map Tower Grove Park on March 24, preparatory to building their own mini-park in their classroom. They will be assisted by Helen Parker and Rick Daley of the Garden's Ecological Services Department.

Magnet School programs will continue through the school year.

Victorian Dolls at Tower Grove House

Authentic bisque dolls from a century ago, handsomely dressed in Victorian costumes, are on display this month at Tower Grove House.

Originally scheduled for February, the doll display was postponed until March after Tower Grove House was closed in February as an energy conservation measure. Now it is ready for spring, resplendent with its Victorian doll collection, which dates from the 1840s to the 1890s.

The dolls are the property of a private collector and have never before been on exhibit for the public.

"IT MIGHT AS WELL BE SPRING"

The Garden has the perfect cure for "spring fever" — the preview of the Spring Flower Show on Friday, March 18, from 5:00 to 7:30 p.m. in the Floral Display House. The festivities, sponsored by Eagle Marine Industries, Inc. and Lilly Pulitzer of St. Louis, will include informal modeling of men's, ladies' and children's spring fashions, refreshments, and music by the St. Louis Banjo Club. This annual panorama of colorful wild flowers and perennials promises to be a most refreshing exhibit.

World Famous Illustrator To Visit Garden In April

Leslie Greenwood.

Prior to the opening of a major American exhibition of his works at the Hunt Institute in Pittsburgh, world-famous botanical illustrator Leslie Greenwood will be in St. Louis on April 4, 5 and 6 to meet and lecture before Members of the Missouri Botanical Garden.

Mr. Greenwood, an Englishman and the illustrator of "Flowers of the World", will open the April Spring Lecture Series on April 4 and will speak again to Members on April 6. He will bring approximately 12 original paintings which will be on exhibit in the John S. Lehmann Building.

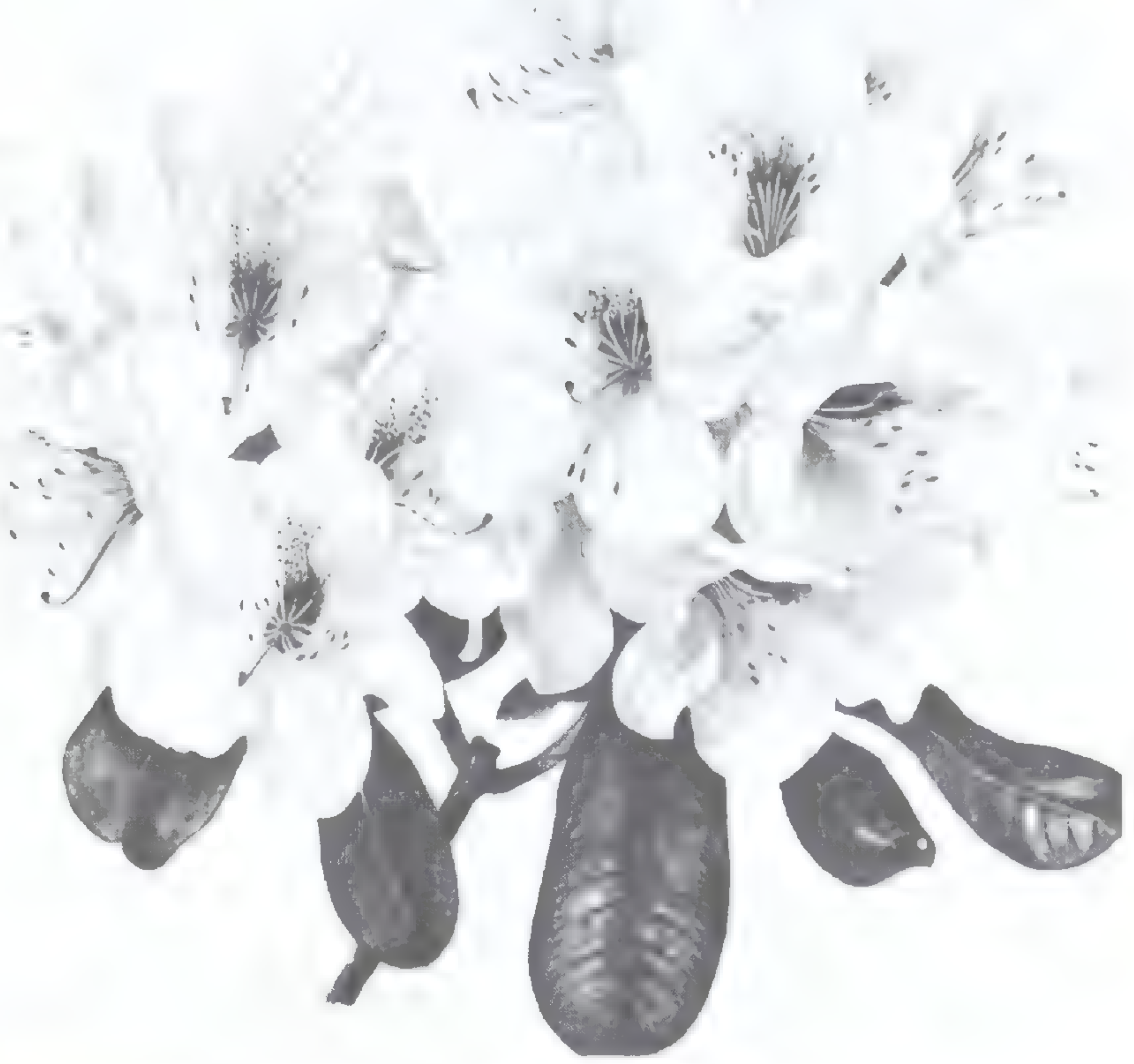
During his visit, Mr. Greenwood will describe the delights and difficulties of painting flowers from life around the world, and will discuss some of the technical details of drawing and painting in various media. With original illustrations at hand, he will explain how to compose a balanced picture of flowers, contrasting or harmonious.

Interesting and unusual adventures Mr. Greenwood has encountered during his special assignments will highlight his lectures.

Mr. Greenwood, son of an artist and grandson of an architect, grew up in a world of good drawing. A native of London, he first began to paint flowers seriously while serving with the British Army in the Far East during World War II. During this period, he painted many of the exotic flowers he encountered while travelling in India, Burma, Malaya and elsewhere, including a trek to the 12,000-foot altitude of the Himalayan foothills. Such paintings generated immediate interest when Mr. Greenwood returned to England, and he was honored with an award by the Royal Horticultural Society.

Since then, Mr. Greenwood has received many awards, including the Royal Horticultural Society's Gold Medal on two occasions.

Mr. Greenwood's paintings are known worldwide and have been reproduced as prints for framing, table mats, calendars, record sleeves, seed packets and in books. He has painted Christmas and other greeting cards for many years, for charities and publishers such as The Medici Society and Royle Publications, Ltd., of London.



A Greenwood Illustration, Rhododendron "Langworth".

"Flowers of the World", published by Hamlyn and distributed in this country by Crown Publishers, Inc., of New York, was wholly illustrated with color on every page by Mr. Greenwood — a mammoth undertaking which required nearly five years and which included many of his earlier works of flowers from the East.

One of Mr. Greenwood's most recent projects was the designing of a set of 12 bone China plates for the Franklin Mint of Philadelphia, representing the 12 months of the year in mixed flowers and issued as a limited edition.

The Pittsburgh exhibition, scheduled for a three-month showing, will include a large number of original paintings from "Flowers of the World."

Swing Into Spring Through the Garde

Mrs. Holland Chalfant, Jr., a volunteer buyer for the Garden Gate Shop, examines an oven-to-table dinnerware set decorated with plants and butterflies selected from the finest hand-colored illustrations.

Laminated plastic trays, salad bowl
boards are available in either a fern

The theme is tulips for spring, carried out in color on glassware, trays and ice buckets.

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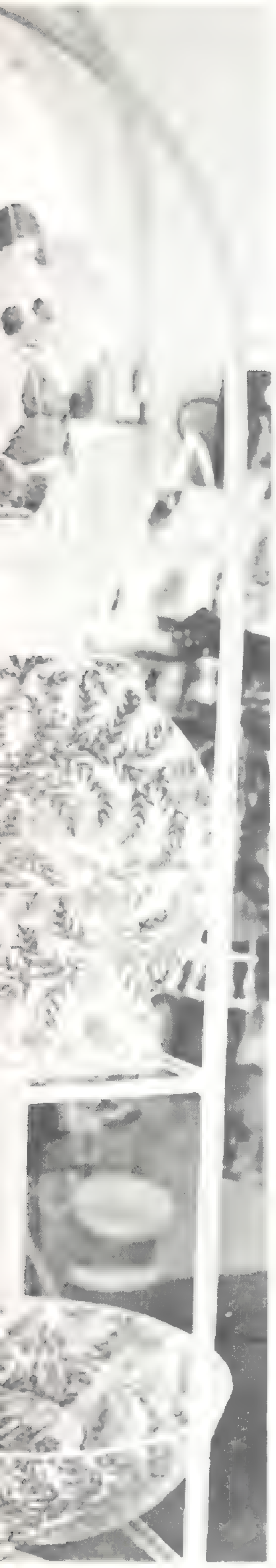

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ttern.

To brighten the spring season at the Garden Gate Shop, volunteer buyers have travelled to Eastern markets to purchase unusual and colorful gift items, now on sale. Unique items in the spring line include glassware, plates, lamps, trays and ice buckets, most bearing colorful reproductions of tulips, strawberries and other plants and flowers.

One of the most delightful Garden Gate Shop offerings for the spring is a charming collection of finely embossed Ironstone dessert plates. Each of the eight separate decorations features a floral center in delicate, natural colors and an embossed flower petal border.

To add indoor color for the spring season, Garden Gate Shop buyers have collected an assortment of ceramic lamps with floral or butterfly design.

G OPEN HOUSE
H 30
OM 5-9 P.M.

Colorful Margaret Smith Handbags from Maine are also among the shop's spring collection. They are cotton print, taffeta lined and come in a wide variety of prints.

Cymbidium Hybrid [Vanda Orchid], one of the many beautiful orchid specimens appearing until March 13 in the Annual Orchid Show in the Climatron, which has drawn thousands of visitors seeking relief from winter doldrums.

Japanese Festival To Accompany Garden Dedication

In conjunction with the dedication of the Japanese Garden on Thursday, May 5, a Japanese Festival will be held at the Missouri Botanical Garden the weekend of May 7 and 8.

Japanese culture will be celebrated in a series of public events, to include music, drama, dance, exhibitions of Samurai swords, horticultural exhibits; workshops for children and teachers, art, films, traditional Japanese food, and other specialty performances.

Nearly 10,000 persons attended the Japanese Festival held at the Garden in May, 1976. This year's Festival will not only be larger than last year's celebration, with more events and participants, but special tours will be given of the new Japanese Garden, Seiwa-En. Extensive arrangements are underway to facilitate parking, provide shuttle busing and easy access to the Garden.

The Japanese Festival is sponsored by the St. Louis Chapter, Japanese American Citizens League, and the St. Louis-Suwa Sister Committee.

Supporting organizations for the Japanese Festival are:

- Asia Resource Center of the University of Missouri, St. Louis.
- Office of International Studies, and the Department of Chinese and Japanese, of Washington University.
- The St. Louis Regional Commerce and Growth Association.
- The National Council of Jewish Women, St. Louis Chapter.
- The United States Department of Commerce.

The Dedication of the Japanese Garden will also mark the opening of World Trade Week, which in St. Louis will focus on Japan. World Trade Week is sponsored by the Regional Commerce and Growth Association, in cooperation with the Department of Commerce.

Garden Visit Is "Fantastic" For Iowa U. Student Group

Thirty-three members of the Iowa State University Horticulture Club visited the Missouri Botanical Garden recently, accompanied by Dr. Paul Domoto, I.S.U. Assistant Professor of Horticulture and advisor to the club, and Spencer Crews, a first-year student at the university, who worked at the Garden in the summers of 1973 and 1974.

The students were met at the Main Gate early on a Sunday morning by Answerman Jack Horner, who conducted a general tour of the Garden. A tour of the greenhouses was arranged by Bob Dingwall, Chief Horticulturist, and a lecture and inspection of the Herbarium was given by Dr. Gerrit Davidse.

The group also visited the Library, which contains more than 100,000 volumes and other materials, including many rare botanical works not available anywhere else in the world.

The Iowa horticulture students were impressed by their visit to the Missouri Botanical Garden. Their club representative, Margo Peitscher, wrote an appreciative letter to Mr. Horner and invited him to visit the Iowa State campus and the school's horticulture greenhouses and horticulture research farm.

Excerpts from the letter follow:

"We could not decide what was the most impressive part of the tour, since it was all so fantastic. Each area of the Garden has its own history and aesthetic value which we can all appreciate and learn something from. The botanical garden adds to the total beauty of St. Louis. Many of us were so impressed that I am sure we will be back to visit.

"We all envy you a little for being a part of the Missouri Botanical Garden, with its beautiful buildings and walks.

"We want to thank you again for the interesting tour. Wonderful people like you help to keep this earth beautiful and more liveable."

Iowa State University Horticulture Club, on recent Garden visit.

The Answerman: *Any Questions?*

When the late George H. Pring retired in the 1960's after serving the Garden as superintendent for more than 60 years, he returned to the Garden nearly every day and donated his mornings to answering gardening questions for the Friends of the Garden. From this small, informal beginning has come the Garden's extensive, constantly-growing Answerman service.

Dan R. O'Gorman, right, retiring after seven years as a Garden Answerman, receives special plaque for his services from Dr. William M. Klein, the Garden's assistant director.

Today, more than 20 volunteers man the Answerman telephones from March 1 to November 1, and one Answerman, Paul H. Kohl, continues this service year long — five days a week, from 9 a,m, to noon — following his official retirement after 50 years of distinguished Garden service as Superintendent of the growing houses and director of flower shows.

From March through October, 1976, the Answermen handled more than 12,000 telephone calls on horticultural questions from St. Louis area gardeners, including the official state agency, the agricultural extension office.

The Answermen are as near as your telephone, but who are they, and where do they come by all that information they obviously have so ready at their fingertips?

Answermen are volunteers — retired businessmen and gardeners who during the late fall and winter, from November through February, attend weekly seminars at the Garden to keep abreast of the latest developments in horticulture.

Fifteen three-hour sessions, taught by Garden staff members and extension specialists from the University of Missouri College of Horticulture, have just ended for the Answermen.

In 1969, George Pring left St. Louis to live with his son-in-law and daughter, Dr. Russell Siebert, director of Longwood Gardens at Kenneth Square, Penn., and Mrs. Siebert. Pring's departure left vacant the much-needed Answerman slot, so Mark Paddock, then assistant director at the Garden, persuaded members of the Regional Council of Men's Garden Clubs of America to undertake the Answerman service as a project.

At that time retired members of the Webster Groves and Richmond Heights Men's Garden Clubs volunteered to become Answermen on a five-day a week, 9 a.m. to noon, basis. Inquiries then were averaging between 30 to 40 calls a day. In addition to Dan O'Gorman, members of the original group of volunteers were Clifford Rhoads, Son Fesler, John P. Brown, Jules Gewinner, William Nolti and the late Walter C. Berkemeyer. They were soon joined by Paul Kohl.

Many gardeners are also indoor plant growers and need help with their plants during the winter as well as the rest of the year. In recognition of this need, future plans call for year round Answerman service, as well as an answer by mail service.

T.K. Smith, Jr., Re-elected President Of Board of Trustees

Tom K. Smith, Jr., who has headed the board for the past 2 years, has been re-elected President of the Missouri Botanical Garden board of trustees. Mr. Smith is Group Vice-President—Operations Staff of the Monsanto Company.

Other officers re-elected at the board's January meeting are Robert R. Hermann, First Vice-President; Daniel L. Schlafly, Second Vice-President, and Charles R. Orner, Secretary. Mr. Hermann is President and Board Chairman of Standard Container Company, Inc. Mr. Schlafly is Chairman of the Board of Arkansas Beverage Company. Mr. Orner is Controller for the Missouri Botanical Garden.

Other members of the Board of Trustees are the following St. Louis businessmen: Howard F. Baer, Clarence C. Barksdale, Joseph H. Bascom, Samuel C. Davis, William R. Orthwein, Jr.; A. Timon Primm III, Warren M. Shapleigh, Sydney M. Shoenberg, Jr.; C. C. Johnson Spink and Harry E. Wuertenbaecher, Jr.

Ex officio members include Jules D. Campbell, President of the Academy of Science of St. Louis; Dr. William H. Danforth, Chancellor of Washington University; The Rev. Donald E. Mayer of Hope United Church of Christ, President of the Board of Education; and The Honorable John H. Poelker, Mayor of St. Louis.

C. Powell Whitehead serves in an advisory capacity to the Board. Honorary Trustees are: The Rt. Rev. William A. Jones, Jr., Episcopal Bishop of Missouri; Leicester Busch Faust and Henry H. Hitchcock.

Mr. Smith

Mr. Hermann

Mr. Schlafly

Gardening in St. Louis

COLD WEATHER EFFECTS ON PLANTS

Due to the severe drought in the area last year, excessive watering in some cases and lack of watering in others, plants were not in good condition when we went into the winter months. With the advent of very cold weather, this has had an adverse effect on many plants. In some cases, such as Magnolia grandiflora, the foliage has browned; likewise with azaleas and some of the hollies.

We strongly recommend that no pruning be done or plants removed until warm weather arrives and plants start to break out into leaf growth. In some cases, these plants will lose the foliage and they may have been killed back part way, but will have sufficient vigor to rebreak and come up from the roots. Next month we will make a recommendation as far as further treatment on these plants is concerned.

In areas where heavy amounts of salt was used on sidewalks, it is important to get out and water heavily once the weather is warm enough. Saturate the ground thoroughly for an hour or so to leach the salts away from the roots of these plants. If the salt is allowed to remain, it will burn the root system and cause the loss of the plants.

Avoid applying fertilizer around any of these areas until plants are back into a good growing condition. Otherwise, additional fertilizer applied to a poor root system can cause further damage to the plants themselves.

LAWN CARE

Lawns should be very carefully raked, dead grass should be cut low as possible and removed with the bare areas reworked and sown with a good mixture of reliable grass seed.

Areas that have had a heavy usage should be aerated as soon as the ground can be worked without compacting it. Top dressing of a good organic matter of lawns is beneficial to build up the organic content and to improve growing conditions.

Some of the better bedding varieties to watch for this year are seed grown Geraniums, which are superior to the old forms grown from cuttings. The new seed Geraniums are much more compact and flower very freely over a longer period. Therefore, they are ideal for planting in the St. Louis area. The 1977 All American Winner 'Showgirl' is an F1 hybrid Geranium which produces bright rose pink flowers on vigorous compact plants approximately 16 to 18 inches in height.

Sprinter Mixture Geraniums are a balanced blend — scarlet, deep red, salmon, and white that flower just a bit later than 'Showgirl; but do extremely well during the growing season. These types, along with several others, will be available at all garden centers as pot-grown plants this spring for planting out in full sun.

Another newcomer, Verbena 'Springtime Mixture' is a distinct improvement in the dwarf verbena. It features a wide range of bright spring colors and continues to flower through most of the season, remaining very compact. It is an excellent plant for use in a warm sunny area.

For the semi-shaded positions, Impatiens 'Futura' is an excellent strain to plant in semi-shaded areas bearing flowers 1½ to 2 inches across and plants 8 to 10 inches tall. This one did very well in our trial gardens last year.

Marigold 'Yellow Galore', a Bronze Medal Winner for 1977, is a semi-dwarf plant bearing large carnation type flowers up to 3¾ inches across. This flowers heavily throughout the summer. 'Color Carpet Alyssum' is a strain of a balanced blend of colors that did extremely well flowering throughout the summer, remaining very compact and free flowering.

PATIO GARDENING

For the limited-space gardener with only patio or veranda to work from, many dwarf vegetables are available. The miniature tomatoes and cucumbers are only two that respond very well to either basket or container growing plantings. Seed for these should be started early and have the advantage of being able to be moved around in lightweight containers so that they get the full use of the sun throughout the growing season.

In selecting vegetable varieties, make sure that they are hybrid vigor and disease resistant; this is important in selecting tomato plant varieties as they are particularly prone to verticillium and fusarium wilt.

TREES AND SHRUBS

Tree and shrub plantings, including evergreens, should receive special attention this month. If the soil is dry anyway, make sure that they have plenty of water down to the base of the roots. Plants which were put in last year and received heavy watering may, when leafing out, tend to be chlorotic as far as color is concerned and they may need a feeding of iron and other special types of fertilizer to get them back into good color formation.

In warmer weather, some pruning to reshape the plants and to remove dead wood will also be essential. Mulches should be applied on all established plantings and on new plantings going in this month so as to conserve moisture in the ground and to keep it from compacting. Cleanup of the garden is important as far as insects and disease is concerned and preparing the soil when conditions are right for early starts of cool crop vegetables and other plants later on.

— Robert J. Dingwall
Chief Horticulturist

Member of
The Arts and Education
Fund of Greater St. Louis

The Beauties of - and danger to - the American Elm

The American Elm has been described by botanists as the most beautiful tree that grows in the Western Hemisphere. For the enjoyment of its beauty alone, the elm merits the best care you can provide. A large tree is impossible to replace during a person's lifetime, and large elm trees are well worth extra care to keep them in good condition.

To maintain elms in good condition, prevention and therapy are required. Good treatment is available through extensive research by aborists and universities throughout the country.

It is important to survey your trees carefully and to watch for any problems which may arise. Dormant spray should be applied sometime in late February before the leaves emerge, as this will help to control many of the insects which can cause damage.

Trees should be root fed periodically to help maintain them in good condition. Any dead wood should be removed at regular intervals so as not to be allowed to accumulate.

The principal enemy, of course, is Dutch Elm Disease.

The disease was first observed in the Netherlands and northern France in 1919, reaching North America about 11 years later. The disease is caused by a fungus, Ceratocystis ulmi, which grows in the water-connecting parts of the tree, causing water vessels ultimately to cease their function and the tree to die.

External symptoms of Dutch Elm Disease can first be noticed on an infected tree in late June or early July. The earliest symptom is a wilting of the leaves on one or more branches. The wilting leaves turn yellow, curl up and then turn brown. This process is known as flagging. The brown leaves may remain on the tree for sometime and the infected branches eventually die back.

Internally, the disease is marked in the outer sap wood by long discontinuous brown streaks, a discoloration due to the phenolic substances. Their origin as well as the role of the fungus and their formation, is yet to be clarified.

The disease is spread from tree to tree by two species of beetles — the native Elm Bark Beetle and the small European Elm Bark Beetle. These beetles breed in dead or dying elm material and become contaminated by this spore of the fungus. When they fly to healthy elms to feed, they introduce their spores into the healthy tree and, consequently, spread the infection.

To date there is no commercially available method of curing the elm tree once it has been attacked by Dutch Elm Disease. However, a number of measures can be taken to help prevent the spread of the disease from infected to healthy trees.

One way is to control the two species of beetles which act as vectors. The first step in this controlled process is to follow the very strict quarantine regulations which prevent importation of elm and elm products from other countries.

The insecticide, Methoxychlor, may be sprayed on healthy trees to prevent or reduce feeding by disease carrying beetles. This chemical is registered for use against Elm Bark Beetles and should be applied in the spring before the new leaves appear, following the instructions and precautions printed on the label.

A second major method of controlling the disease is by sanitation. This involves the rapid removal of infected trees, because dead trees provide a breeding place for beetles, which in turn spread the disease.

Recently a new compound has been made available for the effective treatment of elms: Lignasin, a water soluble compound which is injected into the tree through the root system or just above ground level by low pressure method.

It is recommended that trees should be treated on an annual basis and this spray can be applied anytime during the active growing season. With this material and a good systemic insecticide injected into the tree, good control of the beetles will be achieved and spreading of the disease will be prevented, provided less than 10% of the tree has been infected. The average cost is about $40.00 per tree, depending on how fast it absorbs the amount of liquid, but it is well worth doing, in light of the fact that removal of a large elm tree could cost up to $800.

For further information on treatment of your elms, it is suggested that you contact the local arborists for estimates and information on applications for the trees.

— Robert J. Dingwall
Chief Horticulturist

JANUARY 1977 MEMBERSHIPS

HENRY SHAW ASSOCIATE

Mrs. Ben H. Wells

NEW SUSTAINING MEMBERSHIP

Mr./Mrs. Kenneth Balk

NEW MEMBERSHIPS

Mr./Mrs. Ralph Van Allen
Mrs. John J. Armbruster
Mr./Mrs. William N. Bean
Mr./Mrs. Marc J. Benecke
Mr./Mrs. Ray A. Bowers
Mr./Mrs. Adrian L. Boyer
Ms. Jeannee Brave
Mr./Mrs. Cecil W. Browning
Mr./Mrs. John Bruemmer
Mr./Mrs. Robert V. Coleman
Mr./Mrs. John S. Conant
Mr./Mrs. James P. Connaughton
Mr./Mrs. Clifton O. Crews
Mr./Mrs. Arthur G. Dickie
Mr./Mrs. Fred Dickman
Mr./Mrs. James M. Dixon
Mr./Mrs. James O. Eaton
Mr./Mrs. Seth Eien
Mr./Mrs. Keith Fitzgerald
Ms. Karen L. Fuchs
Mr./Mrs. Carroll Garey
Mr./Mrs. P. Wayne Goode
Mrs. Harry Greensfelder, Jr.
Arthur Hackett Family
Mr./Mrs. Robert T. Horner, Jr.
Mr./Mrs. Arthur W. Ihms
Mrs. Arthur L. Jeude
Mr. Dennis Jones
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Mr. Russell H. Jost, Jr.
Mr./Mrs. John Kirkpatrick
Mr./Mrs. Richard E. Kriegshauser
Mrs. Judith Laing
Mr./Mrs. Carl H. Larson
Miss Rosemary Lawler
Miss Constance P. Meech
Ms. Cynthia L. Merrell
Mr. Robert G. Metcalfe, Jr.

Mr./Mrs. George L. Diehl
Mr./Mrs. Donald Dixon
Mr./Mrs. Donald L. Meierant
Mr./Mrs. Michael Molitoris
Mr./Mrs. David Moreno
Mr. Leo Nau, Jr.
Mr./Mrs. Edward Newsome
Mr./Mrs. Dennis L. Novotny
Mr./Mrs. M. Obermeyer
Dr./Mrs. Edward Okun
Miss Dorothy Osterwald
Mr./Mrs. Paul B. Otten
Mr./Mrs. Gwynn L. Parrott
Mr./Mrs. Maurice Plumer
Mr. Charles F. Pollnow
Dr./Mrs. Reese H. Potter
Mr./Mrs. David Reik
Mr. DeMoy W. Schulz
Mr./Mrs. John A. Semmelmeyer
Mr. Michael Sharpe
Mr./Mrs. Irving A. Shepard
Mr./Mrs. Stanton C. Sherman
Mr. Michael Sneden
Miss Bernice Snelson
St. Louis Nature Study Society
Mr./Mrs. Philip Sultz
Mr./Mrs. Charles P. Swan
Mr./Mrs. Richard R. Taylor
Miss Rosemarie Thenhaus
Mildred L. Thompson
Dr./Mrs. Henry P. Thym
Mr. Eugene Tittmann
Mr./Mrs. Thom. H. Wadlund
Mr. Glenn Walter
Mr./Mrs. Robert H. Waterston
Mr./Mrs. Walter J. Weihe
Mr./Mrs. C. D. Yost

INCREASE IN MEMBERSHIPS

SPONSORING

Mr./Mrs. August H. Hummert, III

SUSTAINING

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TRIBUTES JANUARY 1977

In Honor of Mr./Mrs. I. Kay's 30th Anniversary
Joe and Ruth Pollak

In Memory of Sterling P. Barron
Belle Coeur Garden Club

In Memory of Mrs. Marion Rombauer Becker
Louise C. Ittner

In Memory of Mrs. Charles J. Brecht
Irene Steinman
Vi Taylor

In Memory of Rose Breckenridge
Mrs. Charles J. Moore, Jr.

In Memory of Mrs. F. Baker DeCamp
Mary Elizabeth Bascom
Mrs. Cecilia D. Carson
Mrs. Philip H. Godfrey
Mead Paper Group
Hobart Brothers Employee Recreational Benefits
Mr./Mrs. Robert Krehbiel
Albert F. Polk
Richard / Paula Sheese

In Memory of Mr. Dudley French
Dr./Mrs. Peter Raven

In Memory of Mrs. S.E. Freund's Father
Mr./Mrs. Ellis C. Littmann

In Memory of Mrs. Laura Fries
Mr./Mrs. A. Sherwood Lee

In Memory of Mrs. Tillie Held
Mrs. J. H. Harper

In Memory of Marie Elizabeth Herdlein
Mr./Mrs. Ralph L. Smith

In Memory of Mr. L. Earl Kroeger
Mrs. J. W. Flaig

In Memory of Robert F. Mathews
William H. Charles

In Memory of Mrs. Julia Maehl
Don / Wanda Dill

In Memory of Ray Nesmith
Matthew / Dorothy Klasskin

In Memory of Mrs. Susie Peterson
Mrs. Myrtle Bauer
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Mrs. Mildred Eskridge
Dorothy Ebes
Glendale Street Dept.
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Mr./Mrs. Russell Moll
Miss Marian Reid
Mr./Mrs. Bert B. Ruler
Mrs. Frances Schwarzenbach

In Memory of Peter Schandorff's Grandmother
Darlene G. Thornhill

In Memory of Mrs. Raymond C. Sheets
Raymond C. Sheets and Family

In Memory of Catherine Wade's Grandmother
Darlene G. Thornhill

In Memory of Mrs. William A. White, Jr.
Mr./Mrs. Arthur P. Cooper, Jr.
Mr./Mrs. James R. Gimblett

In Memory of Georgia Wittich
Rose Society Greater St. Louis

In Memory of Mr. Lino Conz
Mrs. William H. Schield

In Memory of Conrad Pinckert
Mr./Mrs. Joseph Kraus

MISSOURI BOTANICAL GARDEN BULLETIN
2345 Tower Grove Avenue
Saint Louis, Missouri 63110

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Missouri Botanical Garden Bulletin

A Shaw Summer

The Pitzman Summer Nature Program, a Garden tradition, will again include a variety of summertime activities for children, parents and teachers.

A three-week course, tentatively scheduled to begin June 15, is designed to help teachers learn the use of plants as educational tools and the natural world as a setting for instruction. The teacher's course, held both at the Garden and the Shaw Arboretum in Gray Summit, Mo., can be taken for college credit through Webster College.

The Green Machine, a week-long course for children aged eight through 14, is tentatively scheduled for July 18-22 and August 1-5. Divided into small groups, participating children will take part in a wide variety of horticultural experiences, including sowing seeds, constructing terrariums and designing a bonsai specimen.

A special activity is planned for older participants: an overnight experience in the Garden's own tropical rain forest – the Climatron.

A four-day family program, designed to promote sharing and informal learning, is tentatively scheduled for July 5-8. Participants will build a family terrarium, play a survival game in the Desert House and hold a viewing party in the new Japanese Garden.

John Doty, of the Arboretum staff, conducts a children's awareness program amid the natural beauty of the four-square-mile Arboretum in Gray Summit, Mo. Pine plantings, upper right, abound at the Arboretum.

Variety is the Spice of Arboretum Summer Program

Summer programs at the Shaw Arboretum, focused on the development of personal relationships with the natural world, will this year include two parent-child programs, two sessions of the Natural Awareness Program, an advanced Natural Awareness Program and two canoe trips on the Meramec River.

As in the past, small program groups will provide each participant with close attention from an Arboretum staff member. Highlights of the summer activities will include optional overnight experiences for older groups, walking the Bush Creek, personal magic spots and assorted adventures.

A full schedule of summer activities, with details, will be announced at a later date.

For further information on the summer programs, contact the Garden's Education Department at 772-7600, extension 54, and the Arboretum, extension 81.

Volume LXV Number 4
April 1977

Crane Island Contributors

More than 100 garden clubs, members of the East Central District, Federated Garden Clubs of Missouri, have contributed nearly $4,000 to make possible the construction of Crane Island in the new Japanese Garden development. The Japanese Garden will be dedicated May 5.

The Garden wishes to thank these generous groups for their support of the project. The clubs include:

NORTH ZONE

FLORISSANT FEDERATION
BELLERIVE ACRES
BELLEVIEW PARK
BLACK JACK OAKS
BLUEBELL CLAN
BON COEUR
CASTLEREAGH
EVERGREEN (North)
FAIR ACRES
FERGUSON
FOUNDERS CIRCLE
FOUR SEASONS
FUN AND FLOWERS
GARDEN VIEWERS
HARMONY CIRCLE
HATHAWAY PARK
HORTICULTURAL STUDY CLUB
LAKE JAMES MANOR
MIGNONETTE (BISSELL HILLS)
NORTHFIELD GARDENERS
NORTHGATE ESTATES
OLD FARM
OLD TRAIL
HALLAWAY
CAPITOL HILL
PADDOCK HILLS
PASADENA
PINE TREE HONEYSUCKLE
PRIMROSE
ROBINWOOD TERRACE
SAN FERNANDO
SPRIG AND TWIG
SUNNYSIDE
TALISMAN
THISTLE AND RUE
VALLEY OF FLOWERS
VILLAGE
WOODBINE

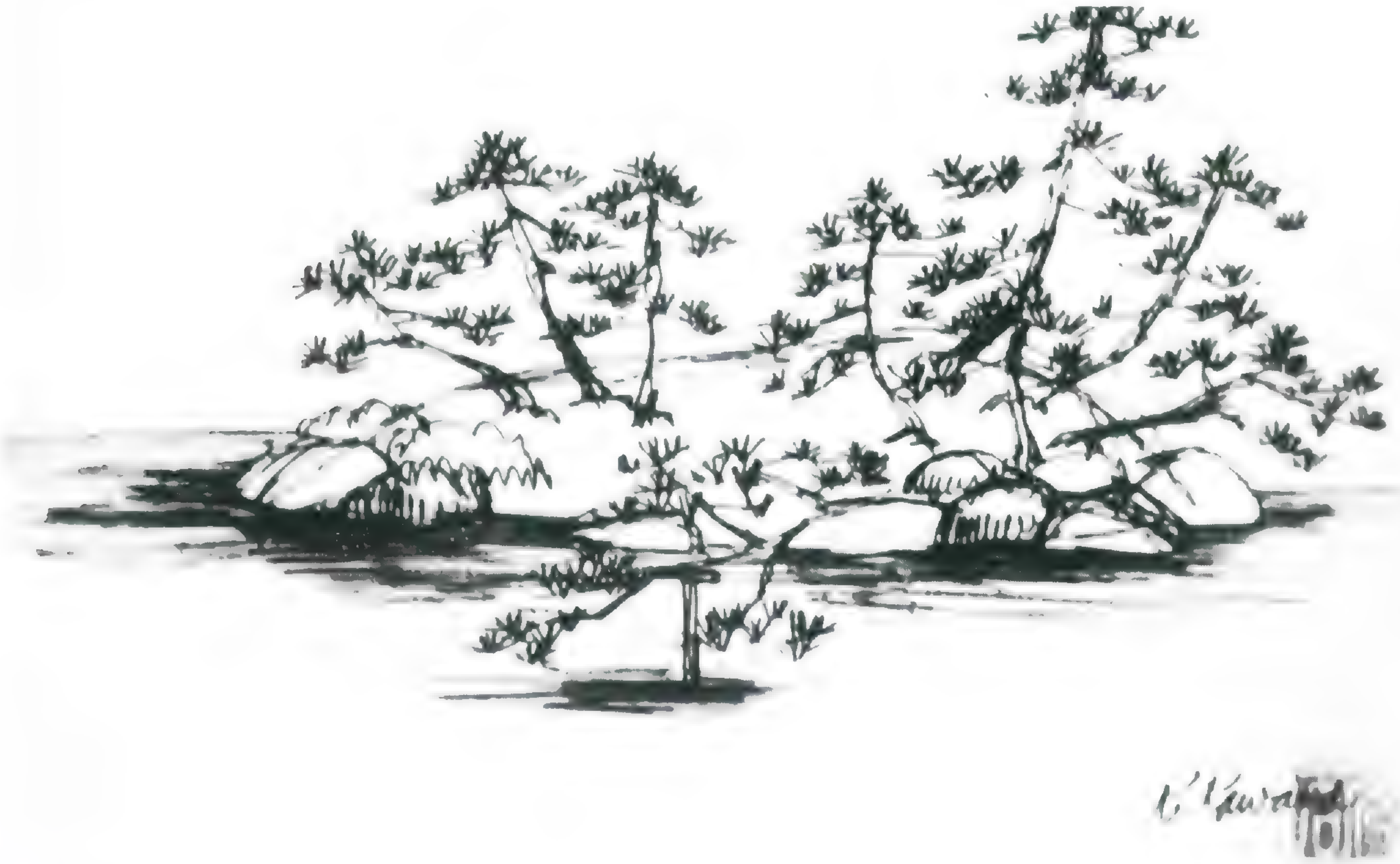
SOUTH ZONE

GREEN TREE COUNCIL
CONCORD
FELICIA
FOREST HAVEN
GATEWAY
GENERAL GRANT HILLS
GREENBRIAR HILLS
HAWBROOK
HEATHER HEIGHTS
IRIS
KIRKWOOD KULTIVATORS
KIRKWOOD #5
LADYBUG
LADY SLIPPERS
MAKESHIRE #1
MATTESE MEADOWS
OAKCREST
PEBBLE HILLS
PETUNIA
SEEDERS AND WEEDERS
SHREWSBURY
SHREWSBURY WILD ROSE
SOUTH KIRKWOOD
SUNSET HILLS
LYNN BROOK
TOWN SOUTH
THE EXHIBITORS
TOWNE SOUTH #1
WEBSTER GROVES #4
WEBSTER GROVES #5
WEBSTER GROVES #6
WEBSTER GROVES #9
WEBSTER GROVES #10
WEBSTER GROVES #20
WEBSTER GROVES

CENTRAL ZONE

BRENTWOOD ASSOCIATION
BELLE COEUR
(Memorial – Betty Szabo)
(Memorial – Mae Risberg)
BENNETT HILLS
BETTER GARDEN CLUBS OF
GREATER ST. LOUIS
BRENTWOOD #2
(Periwinkle)
CHESTERFIELD
CLAYTON #1
CLAYTON #2
CLAYTON #3
CLAYTON #4
CLAYTON #5
CLAYTON #6
CLAYTON #7
CLAYTON #8
COUNTRY HILL
CREVE COEUR
DELMAR
FORSYTHIA
FOUR WINDS
FRONTENAC
GARDEN APPRECIATION
GARDEN GUILD
GENESEO HILLS
GLAN TAI
KEHRS MILL VIEW
MAPLE LEAF
RIVER VALLEY
ROCK HILL #1
ROCK HILL #2
ROCK HILL PLANTERS
ST. LOUIS COUNTY
WESTBURY MANOR
OAKTREE FARM
RIVER OAKS
SEEDERS & CEDARS

Other contributors to Crane Island include: FEDERATED GARDEN CLUBS OF MISSOURI, HAZEL KNAPP TALK,(May 1976,) THELKA & EDW. J. NEUNER.



Crane Island, in a rendering by Professor Koichi Kawana, assistant professor of art and lecturer in environmental design and landscape architecture at UCLA, and designer of the new Japanese Garden.

Acclimatization Weekend

A weekend workshop in Acclimatization, designed to help the participant build a sense of relationship with the natural world, will be sponsored April 29-May 1 by the Shaw Arboretum in Gray Summit, Mo.

Steve Van Matre, lecturer and author of *Acclimatization* and *Acclimatizing,* will be in charge of the program. The workshop will provide an intensive introduction to the Acclimatization approach to nature, beginning with an evening session scheduled for 7:30 to 9:30 p.m. Friday, April 29, in the John S. Lehmann Building of the Missouri Botanical Garden.

Sessions on Saturday, from 9 a.m. to 8:30 p.m., and on Sunday, from 9 a.m. to 1 p.m. will be held in the Adlyne Freund Education Center at the Arboretum, 35 miles southwest of St. Louis.

A workshop fee of $60 includes three catered meals at the Arboretum and all materials. Space is limited and those interested are encouraged to enroll early by calling the Arboretum at 772-7600, extension 81.

Mr. Van Matre is currently a member of the faculty of George Williams College and is director of the Acclimatization Experiences Institute. He maintains an active schedule lecturing and teaching workshops throughout the United States and Canada.

Tower Grove Auxiliary Schedules First Event

The first event sponsored by the Tower Grove House Auxiliary, a box lunch and tour of the 19th century mansion, has been scheduled for noon to 2 p.m. Saturday, April 19, on the Tower Grove House lawn.

It was in January when five volunteers braced the cold and snow to meet with Alice Lynch, Tower Grove House manager, to form the new Auxiliary. The organization has a two-fold purpose: to stimulate public interest in the House and to plan money-making projects to benefit Tower Grove House.

Mrs. L.G. Akers and Mrs. Erwin Briehan were chosen as co-chairman of the Auxiliary. Mrs. J. Edgar Lumpkin is recording secretary and Mrs. Robert M. Siegmund is assistant recording secretary.

Other members of the organization are Mrs. Bernard R. Blume, Mrs. W.L. Crowder, Mrs. Edward Grace, Mrs. Pierre Grace, Mrs. Edward W. Hill, Mrs. G.K. Phoenix, Mrs. Robert Chapman, Mrs. Victor A. Silber, Mrs. Donald L. Freeman, Mrs. William E. Barnes and Mrs. Thomas W. Shields.

The $5 price of the box lunch includes a tour of Tower Grove House and a "surprise" for each participant. Reservations should be made before April 15, to the Tower Grove House Auxiliary, in care of the Garden. In the event of inclement weather, the box lunch will be served in the Museum Building.

Orchids Lend Exotic Beauty to Asian Ceramics at Art Museum

The exotic flowers that grow with ease and profusion in the sultry tropics of Indonesia – orchids – will be used in abundance at the St. Louis Art Museum later this month to provide an appropriate setting for display of Southeast Asian ceramics.

The intricate and delicate beauty of orchids from the Missouri Botanical Garden will enhance the oriental ceramics, brought to St. Louis by The Asia Society.

The unusual exhibition, cosponsored by the Missouri Botanical Garden and the Art Museum, opens on April 28 with a special preview for members of the Garden and friends of the Museum. The Garden's orchid display will remain on exhibit through May 9.

A special Garden Members' tour of the exhibition is scheduled for Wednesday, May 4. Accompanied by a museum guide, a bus will leave the Garden at 10 a.m. for the art museum, where the group will be escorted through the exhibition by museum docents. Following the tour, sherry will be served in the meeting room at 11:30 a.m., followed by luncheon at the museum. The cost for the tour, including luncheon, is $6.75. For reservations, please, call the Members' Office, 772-7600.

Members of the Garden, as well as Friends of the Art Museum, are invited to a preview of the exhibit on April 28, from 7 to 10 p.m. The ceramics exhibit will feature more than 100 fine examples of highly sophisticated ceramic art, from the areas now known as Thailand, Cambodia and Vietnam, collected by Dean F. Frasche on many trips to the Malay peninsula since 1937.

For the preview, shuttle service will be provided from the lighted parking lot at Government and Cricket Drives, next to the handball courts in Forest Park, to the art museum, during the three hours of the preview party.

The exhibition was organized by Asia House Gallery, New York, and Dean Frasche. It is supported by grants from the National Endowment for the Arts and the National Endowment for the Humanities, both federal agencies; the Andrew Mellon Foundation and the Ralph E. Ogden Foundation.

The Garden on the Air

From 10:02 to 10:26 p.m. on the first Sunday of every month, the Missouri Botanical Garden is on the air – with KSD radio programs conducted by Robert Dingwall, the Garden's chief horticulturist. The schedule:

April 6 – "The Japanese Garden," with Professor Koichi Kawana, designer and architect of the Japanese Garden, Assistant Professor of Art and lecturer in environmental design at UCLA.

NIHON: THE WORLD OF THE JAPANESE CHILD

In the spirit of Children's Day, the Japanese holiday devoted to children, a day of special activities for children, their parents and teachers has been scheduled for Saturday, May 7, at the Missouri Botanical Garden. *Nihon: The World of the Japanese Child* is a program sponsored by the Suwa Sister City Committee in cooperation with the Japanese American Citizens League.

The day's activities will include participatory workshops, live performances, films, tours of the Japanese Garden and a display of artwork created by the children of St. Louis and Suwa, our Japanese Sister City. The philosophy of this program is expressed by the ancient Chinese proverb — "Tell me, I forget. Show me, I remember. Involve me, I understand." Thus, *Nihon: The World of the Japanese Child* will allow children and adults to experience Japanese culture by hearing, seeing and doing things Japanese.

Volunteers from the St. Louis Section, National Council of Jewish Women, the Asia Resource Center of the University of Missouri-St. Louis, the Suwa Sister City Committee and the Japanese American Citizens League will conduct workshops in ikebana (flower arranging) and flower pressing, woodblock cutting and printing, origami, puppetry and mythology, song and dance, haiku and kitemaking.

These workshops will give children and teachers a preview of the learning activities incorporated in the forthcoming National Council of Jewish Women's free travelling children's exhibit on Japanese culture.

The day's program will also feature several live performances. Andrew T. Tsubaki, Director, International Theatre Studies Center, University of Kansas, and several of his students will provide St. Louisans a rare opportunity to view performances of classical dance, theatre and a demonstration of style make-up. Other performances will include the martial arts and dancing by the Sakura Dancers.

Participants must register in advance for the tours and all workshops except song and dance. Some workshops require a small fee for materials. Call Kathy Pierson at 453-5521 for a brochure with schedule of events and registration information.

Members' Day

On Friday, May 6, a special Members' Day will be held to celebrate the official opening of the new Japanese Garden, *Seiwa-En.*

From 3 p.m. to 6:30 p.m., guides will be stationed at various points of interest throughout the Japanese Garden to provide informative talks. A Japanese Tea Ceremony, "Cha No Yu," will be presented by Mrs. Kikue Shirasaki Atkins at 3:45 p.m.

Following this, there will be a series of performances by students from the University of Kansas International Theatre Studies Center, led by Professor Andrew T. Tsubaki. The program will include Kyogen-style and No-style dancing, a fighting sequence, and a demonstration of applying Kabuki style make-up. Special refreshments will be served and a commemorative gift will also be available for our Members.

Subtropical Treasures of Japan

From April 16 to May 15: the Climatron will be the site of a self-guiding tour of subtropical plants of Japan. More than three dozen plants native to that country will be featured on the tour, which celebrates the dedication of the Japanese Garden, on May 5. Guide leaflets will be available, providing visitors with the names — Japanese, English and scientific — of each plant as well as information on where it may still be found growing wild in Japan. Among those plants which will be seen on the tour are the loquat, shell ginger, sweet olive, holly fern, creeping fig, crinum lily, and wax plant.

The Century Plant and its Kin

The Desert House from April 9 through April 24: will feature an exhibit of the genus *Agave,* to which the century plant belongs. Most of the Garden's collection of over forty different agaves will be on display. The exhibit, which will be located in the western end of the Desert House, will focus on the economic importance of this interesting group of American succulents. In addition to being highly decorative, these spiny-leaved plants have provided man with a wealth of important products, ranging from binding twine to a national beverage. Information regarding their availability and suitability for home culture will also be presented.

The MISSOURI BOTANICAL GARDEN BULLETIN is published 12 issues per year monthly by the Missouri Botanical Garden, 2345 Tower Grove Avenue, St. Louis, Mo. 63110. Second class postage paid at St. Louis, Mo. $5.00 per year. $6.00 foreign.

Biblical Plants of the Mediterranean

Plants cited in the Bible will be displayed in an unusual self-guiding tour from April 2 through May 1 in the Mediterranean House at the Missouri Botanical Garden.

In all, about two dozen Biblical plants will be included on the tour. Guide leaflets will be available, providing visitors with the Biblical name, modern common name and scientific name of each plant, as well as one or more references to it in the Bible.

Especially, Old Testament quotations will be emphasized, from the Books of Genesis, Exodus, Deuteronomy and Isaiah, in observance of Passover, April 3 – April 10, and Easter, April 10. New Testament quotations are taken from the synoptic Gospels and Revelations.

Among plants to be seen on the tour are the rose of sharon, balm of Gilead, crown of thorns, hyssop, myrrh, camphire, gopher wood, nettle, pomegranate, wormwood, cypress, fig and olive trees, sources of bitter herbs, lilies of the field, and grape vines.

Identifying labels for the Biblical plants will include information as to how the plants were used by Biblical man. The carob tree *(Ceratonia siliqua),* for example, a member of the pea family, produces a pod which was not only edible but was used as a unit of weight and measure. The word "carat" is a derivation, and is used in measuring precious gems. In the display, the carob represents the "husks" of the Bible.

The Mediterranean House simulates the mediterranean climate – cool moist winters and hot dry summers – in which these plants have their origin.

"A bell and a pomegranate, a bell and a pomegranate, round about the hem of the robe to minister in; as the Lord commanded Moses." (Exodus 39:24-26). Pomegranate – Punica granatum (Punicaceae) *in flower in the Mediterranean House.*

Garden to Host AABGA Conference

From April 21 through 25, the Garden will be the host institution for the annual meeting of the American Association of Botanical Gardens and Arboreta (AABGA), the only professional organization which represents botanical gardens, arboreta, educational institutions and garden centers involved with public horticulture.

The theme of the 1977 AABGA conference will be "Master Plans; What Has the Architect in Store for You?"

Principal speakers scheduled to address the conference sessions include Dr. Peter H. Raven, Garden director; Professor Koichi Kawana, lecturer in environmental design and landscape architecture at UCLA and designer of the new Japanese Garden; Elizabeth Scholtz, director of the Brooklyn (N.Y.) Botanical Garden; and Dr. Howard Irwin, director of the New York Botanical Garden.

Conference activities will include sessions at the Clayton Inn in Clayton and tours of the Garden, the Shaw Arboretum in Gray Summit and special gardens in the St. Louis area.

Registration fee for the total conference package, including all meals and tours, is $172.75; registration fee only is $70.00. The fee for registration on a daily basis is $20.00, and students will be admitted at a special rate. For information, call 772-7600, ext. 20.

Children Again Benefit from Schlafly Grant

Thousands of St. Louis public school children again will be able to participate in education programs at the Garden in 1977, because of a support grant contributed to the Garden by Mr. and Mrs. Daniel L. Schlafly.

Mr. Schlafly, St. Louis businessman and civic leader, is second vice president of the Garden's Board of Trustees. He is also a member of the St. Louis Board of Education and serves as chairman of the St. Louis University Board of Trustees.

The Schlafly grant, instituted in 1976 but continued for the current year, covers the admission and material costs for school children and teachers to attend more than 40 separate educational programs during the year. The programs include plant science lectures, workshops on plant identification, horticulture and investigation, and guided tours of both the Garden and the Shaw Arboretum at Gray Summit, Mo.

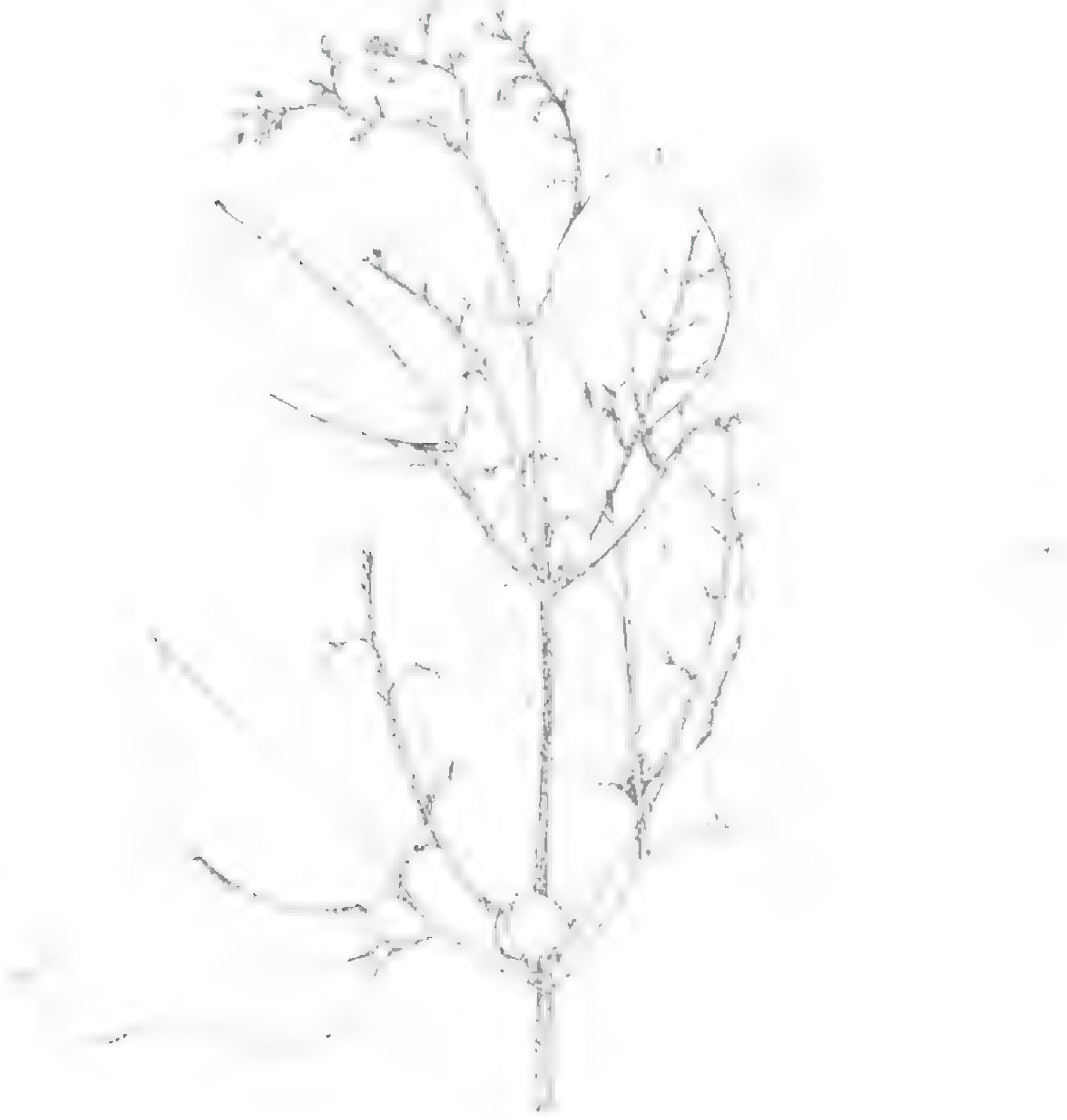
Between February and May of 1976 – under the Schlafly grant – more than 55,000 public school children participated in Garden education programs, compared to 14,000 in 1975, before the grant program was in effect.

Flora of Peru

In Amazonian Peru, there are no roads and virtually all travel is by boat along the Amazon River and its tributaries. Drenchings and engine malfunction are everyday occurences. Climbing a vine is often the method of collecting botanical specimens. And the landscape is shared by such inhabitants as piranha fish, Amazon sting rays and electric eels.

But Amazonian Peru is also nearly synonymous with botanical diversity, and the Garden is there.

The National Science Foundation recently announced a $38,200 grant for the continued support of a project entitled "Floristics of Amazonian Peru," under the direction of Dr. Al Gentry of the Garden's Botany Department. A cooperative enterprise of the Garden and the Field Museum of Natural History in Chicago, the project will lead to completion of a published countrywide *Flora of Peru,* the first 20th Century Flora for any South American country.



Tynnanthus villosus, *a new species of the Bignoniaceae, trumpet creeper family, described by Dr. Gentry in 1976.*

The grant will support the second year of a three-year period of investigation, which emphasizes plant-collecting in Amazonia, botanically the country's richest but least known region.

Dr. Gentry, a specialist in the taxonomy and floristics of tropical plants, was in the field in Peru in January-February and June-July of 1976, and left St. Louis this past February for additional specimen collection there.

Also engaged in collecting herbarium specimens is a Peruvian botanist, Juan Revilla, who works from the Garden's laboratory facility in Iquitos. Botanists from a number of other institutions, both in the United States and abroad, are also collaborating on the project.

The Amazonian region of Peru is not extensively explored and many of the plant species being collected have already proved "new to science." It is hypothesized that during Pleistocene climactic fluctuations, Amazonian Peru provided a major refugium for rain forest plants. If this is so, many evolutionarily important relict species with restricted distributions may be discovered during the course of botanical explorations there.

In light of such botanical potential, a few annoyances – such as sting rays and electric eels – become unimportant amid the excitement of collecting plants in this little known botanical treasurehouse.

Spring Lecture Series Continues

The second part of the spring Lecture Series for Garden Members, "Potpourri of Presentations," will be held on four April Wednesdays, beginning April 6.

Due to ill health, Leslie Greenwood, famous botanical illustrator of "Flowers of the World," will not be able to come to St. Louis from England for his scheduled lectures at the Garden.

On April 6 at 8 p.m., Members will hear a comprehensive overview of the gardening year to be given by Robert Dingwall, chief horticulturist at the Garden. He will speak on "The Four Seasons Garden Technique."

The rest of the series is as follows:

April 13, "Arnold Arboretum" – a superb film introduction to one of the great garden treasures of the United States. The diverse educational and research activities of Harvard University's large arboretum are explained, with a look at horticultural and botanical work rarely examined in film. Students of science and ecology, as well as anyone concerned about the natural environment, will find this an interesting and useful film about a 100-year old "museum for threes" designed by famous landscape artist, Frederick Law Olmstead;

"Poisonous Plants" – a film on the 300 species of harmful plants known to exist in America, in your garden, or in your kitchen. The simple safety rules offered in this film are a valuable aid in avoiding the common plants that may cause harm.

April 20, "Living Gardens of Longwood," "Orchids of Longwood Gardens," "Waterlilies of Longwood Gardens" and "Chrysanthemums" – four outstanding films reflecting the botanical beauty of the Longwood Gardens at Kenneth Square, Penn.

April 27, "Afghanistan: Landscapes and Gardens" by Tamra Engelhorn Raven. Afghanistan, in Central Asia, where East and West have met since before the time of Alexander the Great, is also the homeland of many of the wild relatives of both cultivated plants and domesticated animals. The Persian Garden, with its roots in the West, and the sacred grove from the East, both occur in Afghanistan.

State Park Study

In the fall of 1976, the Ecological Services Department conducted an inventory of the natural resources of St. Joe State Park, Flat River, to assist in the master planning of this recent addition to the state park system.

St. Joe Minerals Corporation donated the 8,500-acre Flat River mining tract to the State of Missouri last September, after a century on the site of what at one time was the largest lead mine in the world. The lead mining operations have since moved to Viburnum in the New Lead Belt.

Later, the Department of Natural Resources awarded Team Four, a St. Louis planning and design firm, a contract to design the park master plan. Under a $10,000 subcontract with Team Four, the Garden provided a vegetation map and interpretation of the park's natural resources. Dr. William M. Klein served as project director and Richard H. Daley as director of field studies. The contract was managed by Helen Sussmann Parker and Dr. David Spellman was responsible for the plant collections, identifications, and much of the field vegetation mapping.

Dr. David Spellman, consultant, works in the field as part of a St. Joe State Park natural resources inventory conducted by the Garden's Ecological Services Department.

The park's topography is diverse, and eight distinct plant communities were described and mapped during the field study. Wildlife habitat was evaluated, and the fish fauna in several small lakes was sampled to provide an indicator of water quality. The survey concluded that the park flora is typical of the northern Ozarks, and that the water quality appears to be high.

The park includes an Ozark pinery where shortleaf pine and red and white oaks form a tall, dense canopy in one of the most scenic of the site's plant communities.

The mining history of the park land resulted in a most unique landscape feature — more than 1000 acres of sand-like waste from the lead extraction process. The reclamation of this flat, open area was begun by St. Joe Minerals Corporation. Their efforts created an extremely interesting plant association which has begun to resemble a sand prairie, a grassland community which is naturally found west of Missouri, especially in the central Great Plains.

Team Four has made an analysis of the outdoor recreation demands which might be served by the new park and, in conjunction with Anselevecius-Rupe, architects, is reviewing the feasibility of creating a mining museum in one or more of the original mine buildings. Sverdrup Corporation, engineers, is also working on the project, examining engineering constraints which might affect park development. These data and those from the natural systems survey conducted by the Garden will be used to develop the master plan for the Missouri Department of Natural Resources. The Ecological Services Department staff is continuing to provide consultation on the biological and ecological features of this park site, so that the survey will provide a good basis for land use decisions which will capitalize on the many opportunities available at the new St. Joe State Park.

CANADIAN ROCKIES TOUR
JUNE 12 – JUNE 20, 1977

Nine days filled with breathtaking scenes of mountain grandeur and brilliant floral displays. Total cost of the tour is $979.00, which includes round trip airfare, private motor coach transportation, *all meals,* sharing twin bedroom with bath, sightseeing, admissions, taxes, transfers, escort, luggage handling and a $50.00 tax deductible contribution to the Garden. Don't miss this opportunity to enjoy the scenic beauty of the Canadian Rocky Mountains. Space is limited.

AUTUMN IN NEW ENGLAND

An autumn excursion into the pristine New England countryside and including a number of historic sites has been planned for Garden Members from September 25 through October 2.

Natural wonders included in the itinerary are the Adirondack Mountains, the Green Mountains, the White Mountains and the Berkshires, Lake George, Lake Champlain and the region's rockbound coastal areas. Cities to be toured include Gloucester, Boston, Lexington and Concord, Massachusetts.

Cost of the excursion is $723 (single occupancy), $635 (twin) or $612 (triple). For additional information, please contact the Members Office at 772-7600, extension 25.

Garden Visitors

Members of the National Livestock Feeders tour Tower Grove House during a recent Garden visit. Some 400 NLF members were in the group.

The Desert House drew members of the Archives of American Artists, who toured the Garden while attending a national conference in St. Louis.

Flower Sunday at Christ Church Cathedral

"Flower Sunday," the annual religious service at Christ Church Cathedral established at the bequest of Henry Shaw, has been scheduled this year for Sunday, April 24, with the sermon to be delivered by Neil H. Porterfield, president of HOK Associates.

Since 1890, one Sunday each year has been selected as "Flower Sunday," according to the wishes stated in Mr. Shaw's will, that a sermon be preached "on the wisdom and goodness of God as shown in the growth of flowers, fruits and other products of the vegetable Kingdom."

Mr. Shaw asked also that the Cathedral be decorated for the day with flowers taken from the Missouri Botanical Garden.

CALDER SCULPTURE AT GARDEN

Five Rudders, an Alexander Calder sculpture on loan from the Steinberg Gallery at Washington University, will be on display April 1 through October 31 in the Lily Pool near the Garden's Main Gate.

Scientists Present Book to Garden

Dr. Frans A. Stafleu of the University of Utrecht, the Netherlands, and Dr. Richard S. Cowan of the Department of Botany, Smithsonian Institution, have presented a copy of their book — "Taxonomic Literature," Vol. 1, Second Edition — to the Missouri Botanical Garden.

The two scientists, who conducted the major portion of the book's research work at the Garden, were in St. Louis for the presentation and additional research work.

The Garden's library is one of the most extensive botanical research resources in the world, the repository of more than 300,000 books and other materials. To prepare their book, Drs. Stafleu and Cowan have visited the Garden library twice a year for the past three years.

Dr. Frans Stafleu of the Netherlands, left, and Dr. Richard Cowan of the Smithsonian Institution review rare book resources in the library.

Seeing Green

If your Bulletin has been tagged with a green sticker, it is a reminder that your membership has expired. We want you to continue to receive all membership benefits, especially the Bulletin, so the sticker is attached after renewal letters are sent out. Should you continue to receive green-stickered Bulletins after you have renewed, please understand there is a time lag involved in updating our membership lists, and the actual mailing date of the Bulletin.

The Members' office updates the membership list daily. So if you have any questions, please, don't hesitate to contact the Members' office.

—Nancy Lammers
Executive Secretary
Members of the Garden

Garden Library Hears Opportunity Knocking

In recent weeks, the Garden library has been offered several opportunities to purchase certain valuable items that would serve to strengthen portions of its research collections. Donors are needed to help underwrite all or part of the cost of three items in particular:

Research Catalog of the Library of the American Museum of Natural History. This set of thirteen volumes reproduces in book form the library catalog of one of the greatest book and journal collections on natural history in the United States, listing some 300,000 volumes, as well as the Museum's collections of rare books, manuscripts, pamphlets, visuals, and letters. The addition of this important reference tool to the Missouri Botanical Garden Library would greatly facilitate the Garden's research efforts by providing us with access to the bibliographic records of another major research collection.

Portrait and Manuscript Collection. A rare and irreplaceable collection of portraits and manuscript materials relating to the history of European botany from the sixteenth through the nineteenth centuries has been made available to the library. The portraits in this collection, which would be added to our existing portrait collection, include engravings of botanists and natural historians both famous and obscure, including such notables as Captain James Cook and Alexander von Humboldt. The manuscripts include autograph letters, holographic lecture notes, and manuscript drafts of articles by eleven different *nineteenth* and *twentieth* centure botanists, including Sir William Jackson Hooker, once director of the Royal Botanic Gardens, Kew; and Karl Friedrich Philipp von Martius, whose *Flora Brasiliensis* (15 vols, 1840-1906) remains one of the most important botanical studies of Latin America.

Paintings from Nootka Sound. In 1792, as part of the continuing dispute between Spain and England over possession of portions of what is now Washington and British Columbia, the Spanish throne authorized an expedition to Nootka Sound under Captain Juan Francisco de la Bodega y Quadra. As well as having a political motivation, the expedition was charged with scientific exploration as well, and an accompanying botanist and a staff of artists produced descriptions of plants discovered along the Pacific coast, and paintings of these plants as well. The library has the opportunity to acquire two of these original watercolors for inclusion in the Garden's collection of important scientific illustrations.

Contributions for any of these materials are tax deductible. Anyone wishing to donate toward the acquisition of these items is invited to contact Dr. Peter H. Raven or the Head Librarian, James Reed.

WINTER DAMAGE

Results of the winter damage, particularly the freezing back of plants, becomes a major concern this month. Where flower buds have been frozen, wait until the plant starts making actual growth, and remove all material back to the areas where growth emerges. If the cuts are ½-inch or more, use a good tree paint over the cut to help prevent decay from setting in.

Hollies, which have been frozen back severely, in many cases will rebreak near the ground level. They will make good growth, however, provided they are kept properly watered and mulched over the spring. All dead wood, of course, should be removed. The new growth coming will be superior in most cases to plant replacements, unless you are able to find local winter hardy plants that were not damaged severely.

Rhododendrons on an east or south exposure may be frozen back. They need protection from the southwest winds particularly. It helps to locate them on the north side of a building, out of the winter sun.

CORRECTIVE PRUNING

Partly damaged plants may need corrective pruning to reshape them, requiring the removal of some good growth which was not affected. In severe cases soft succulent growth will develop. Removing some of this new growth will allow the plant's strength to go into sturdy growth that is properly spaced and open for good aeration.

Roses can be pruned any time from the first of April through mid-April and the variety that you are growing will determine the height of pruning.

If the roses have been in a vigorous condition last year and appear in good growth now, plants can be pruned 10 to 12 inches above the ground level. You should prune to an outside bud to encourage the new growth to come up and out away from the center of the plant. Leave three to four sturdy canes; if the roses are weak, remove all but two canes cutting these back to six to eight inches above the top of the plant. Immediately following pruning, work additional superphosphate and a balanced fertilizer such as a 6-12-12 lightly around the base of the plant. If soil conditions are somewhat dry, this should be followed with a good watering program. Spraying with a good fungicide such as Benlate should be commenced as soon as new growth begins to appear. Make sure that you spray under the leaves as well as on top. Repeat if needed or after any heavy rain. Trees and shrubs which appear to be badly frozen back this spring due to the severe weather can be pruned now that new growth is beginning to show.

In many cases, it may be necessary to cut the plants back very severely to encourage the growth to come to the base of the plant.

CRABGRASS KILLER

Pre-emerge crabgrass killer should be applied from mid-April to late April for control of crabgrass later on. Make sure that directions are followed and that the pre-emerge is applied evenly over the area.

A second application of lawn feed can be applied in late April to stimulate good growth. This should be a fertilizer which is low in nitrogen such as a 5-10-10 or 6-12-12.

Areas which were seeded in early March and appear to have a weed problem can have a herbicide used the later part of April without injuring the new grass, provided that directions are followed according to the material being used. Herbicides should not be applied where new seed is being planted or where seedlings are less than 6 weeks old. Azaleas, rhododendrons, and other ericaceous plants, including hollies, can have iron chelate with epsom salts, one tablespoon of each to a gallon of water applied to the plants to help correct the chloratic conditions. Three to four gallons should be applied for plants that are two to three feet high; increase this amount according to the largest size of the plants involved.

COOL VEGETABLES

All cool vegetable plants should now be planted in seed or in transplant form into the garden so as to get a good early start. If these are delayed until late April, they will not mature as rapidly and will occupy space over a longer period of time.

Garden areas should be well worked up prior to planting with superphosphate added and plenty of organic matter. Newly set out plants can be mulched lightly to help to control moisture and temperature conditions, increasing the mulch as the plants continue to grow until the mulch is two to three inches deep. This will help to control weeds through the summer months.

Warm vegetable crops should not be set out until all danger of cold is over and usually this does not occur in this area until late in April. Setting them out too early can cause a setback and they will take longer to mature than if they were set out at the proper planting time. Many of the new hybrid vegetables will be available at the garden centers throughout the metropolitan area and a number of these are ideal for container growing for people with limited space. Specially prepared soil mixes which are light weight are available, such as Metro-mix. These are ideal to use in hanging baskets and they make ideal planters where weight could be a problem. Make sure that plants are kept moderately moist and feed them at regular intervals to keep them in good condition.

HOBBY GREENHOUSES

Hobby greenhouses should be carefully watched during this month to see that the temperatures do not build up too much and also to prevent severe drafts should we have any cold spells. Gradually you should leave your greenhouse open in the evening to harden off your plants for several days before they are placed in protected areas outside for several days before planting in permanent locations in the garden.

Potted plants should not be moved outdoors until late in April or early May. For continuous bloom of gladiolus, plantings started in mid-March should now be repotted the end of the first week in April and at three to four week intervals until late June for a continuous supply of cut flowers throughout the midsummer and late summer periods. Caladiums, which come in multi-shaded colors, can be planted out in the garden in late April for semi-shaded areas where lack of sun is a problem along with impatiens and coleus for a good color effect.

Watch for insect problems and observe your garden daily and spray individual plants as needed rather than the whole garden. Sprays are best when applied early in the morning just as the sun is beginning to come up and before the temperature gets too high. Avoid all sprays once the temperature is 80 degrees or over as this can cause burning to your plants. If water is needed, apply to the equivalent of two inches of rain so as to encourage deep rooting.

— Robert J. Dingwall
Chief Horticulturist

Trip to Japan

Garden Members taking advantage of the fall trip to Japan, Oct. 2-22, will have the chance to examine at close hand some of the most famous gardens in the world.

At Kyoto, the group will visit the 17th century Sento-Gosho, which was designed by Kobori Enshu and completed in 1628, as an Emperor's residence. The strolling visitor will see a rich profusion of varying scenes and vistas, all relating harmoniously to the central focal point, the pond.

A garden noted for the horizontal stress of its composition, low rock formations set in a gently rolling moss-covered surface backed by a low, formal straight hedge is Entsu-ji, also at Kyoto. Distant Mount Hiei forms an integral part of the total scene, which is a superb example of the "borrowed landscape" technique.

Members interested in the trip to Japan, which includes a tax-deductible gift to the Missouri Botanical Garden, should call the Members office 772-7600. Reservations are limited.

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(Continued next page)

Garden Tribute

Spring, a season of botanical growth, is also a time when Garden Members and friends might pause and consider contributing to the growth of the Garden itself.

Generous gifts to the Tribute Fund — given in memory of someone, in honor of someone or to mark a special occasion — help to ensure the maintenance and expansion of one of our nation's most renowned institutions. Gifts of $25 or more may be directed for a specific purpose.

Please clip the attached form and use it to become a contributor to the Tribute Fund.

The enclosed contribution to the Missouri Botanical Garden is given:

In memory of ______________________

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MISSOURI BOTANICAL GARDEN BULLETIN
2345 Tower Grove Avenue
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Bulletin

Seiwa-En to be Dedicated May 5

Under spring clouds, Seiwa-En lives up to its name — "garden of pure, clear harmony and peace." The garden's logotype, upper right, depicts a pine tree, symbolic of longevity and happiness.

After years of planning and construction, supported by an unprecedented level of commitment from administrators, staff, friends and especially donors, one of the most breathtaking accomplishments in the Garden's 118-year history will be dedicated on Thursday, May 5, 1977.

On that day, Seiwa-En, the new Japanese Garden, "the garden of pure, clear harmony and peace," will become a reality.

To mark the occasion, a four-day series of events — dedicating the new garden and celebrating Japanese culture and tradition — has been scheduled for May 5 through 8. The events will include the actual dedication ceremonies; a special Member's Day to view the new garden; a day of Japanese-related activity for children, their parents and teachers; and a Japanese Festival Day for the general public.

THE DEDICATION

The dedication itself will begin at 5 p.m. on Thursday, May 5, with opening remarks by Dr. Peter H. Raven, Garden director and the principal force behind the development of Seiwa-En. On hand to welcome those in attendance will be Tom K. Smith, Jr., president of the Garden Board of Trustees.

A special guest at the dedication, also scheduled to speak, will be His Excellency Fumihiko Togo, Ambassador of Japan to the United States of America. Ambassador Togo will be accompanied to St. Louis by Madame Togo.

Other special guests will include The Honorable Kiyoshi Sumiya, Consul General of Japan in Chicago; Madame Sumiya; Mayor Setsuji Iwamoto of Suwa, St. Louis' sister-city in Japan; and elected officials and

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Students from Farmington, Mo., cross the Taikobashi (drum bridge), one of the three traditional Japanese foot bridges within the new Garden.

dignitaries from Missouri and the St. Louis area.

The actual dedication ceremony will include a traditional Shinto rite conducted by the Rev. Taiichi Tsuyuki, head minister of the Konko Church in Los Angeles, assisted by Toshitane Hirabayashi of Nagano, Japan, whose firm constructed the Garden's Teahouse; the Rev. Takashi Murakami of Nagano, and others, including Mrs. Tsuyuki. It will include:

— Onusa (Purification): this marks the opening of the ceremony with a purification of the mind, heart and soul, in order that all participants and attendants may be prepared to receive and accept Kami's (God's) blessing;

— Norito (Main Prayer): this is the most important part of the ceremony and is offered by the Reverend Tsuyuki. The prayer embodies words of purification, thanksgiving and prosperity for this ceremony and is given in words of highest respect to Kami;

— Saishu Tamakushi (Symbol of the True Heart): conducted by the Reverend Tsuyuki, this offering symbolizes our assurance to Kami that our hearts and souls are pure. It also symbolizes our everlasting gratitude for Kami's blessings, particularly the honor of being allowed to perform this ceremony on this day;

— Kibimai (Sacred Dance): the dance will be performed by Fujima Kansumi, a member of the Kansuma Kai (classical Japanese dancers) of Madame Fujima Kansuma. The dance offered on this occasion is called Kimigayo which means "eternal blessing."

Later, immediately preceding the final remarks offered by Dr. Raven, the Naorai (Holy Sake Ceremony) will be performed, including the drinking of the sacred rice wine.

Also on Thursday, a dinner honoring Ambassador and Mrs. Togo and the Consul General Sumiya will be held at the University Club.

MEMBERS' DAY

On Friday, a special Members' Day will be held as part of the Japanese Garden dedication weekend. As a memento of the occasion, Members will receive a pine tree symbolic of the new garden's logotype, itself a crest depicting a pine tree. The pine, essential to any Japanese-style garden, traditionally is called Tokiwa, a word meaning "evergreen" and a symbol expressing longevity and happiness.

Highlights of the Members' Day will include:

— A Japanese Tea Ceremony, "Cha-No-Yu," presented by Mrs. Kikue Shirasaki Atkins, at 3:30 p.m. on a stage north of the Administration Building;

— The presentation to the Garden of a series of historic Japanese calligraphy screens, created by the late Japanese Prince Sadanaru Fushimi, who visited the Japanese Imperial Garden at the 1904 St. Louis World's Fair. The screens will be presented at 4:30 p.m. by Miss Sachiko Kacho and the Marchioness Kacho, daughter and widow of the Marquis Hironobu Kacho, formerly His Imperial Highness Prince Hironobu Fushimi.

— At 4:45 p.m., the introduction of honored guests, including delegations from Suwa, Japan, St. Louis' sister-city; and Nagano Prefecture, Missouri's sister-state.

— A performance by students from the University of Kansas International Studies Center, led by Professor Andrew Tsubaki. The performance, at 5 p.m., will include Kyogen-style and No-style dancing, as well as a demonstration of the application of Kabuki-style theatrical makeup;

There will also be a display of Japanese flower-arranging, by Ikebana International, in the Floral Display House.

NIHON: THE WORLD OF THE JAPANESE CHILD

On Saturday, May 7 — in the spirit of Children's Day, the Japanese holiday devoted to children — a day of special activities for children, their parents and teachers will be held at the Garden. The program is sponsored by the Suwa Sister Committee in cooperation with the Japanese American Citizens League.

Beginning at 9:30 a.m., activities will include participatory workshops in Japanese arts and crafts, live performances, films, tours of the Japanese Garden and a display of artwork created by the children of St. Louis and those of Suwa, Japan. Live performances will include traditional Japanese theater, the martial arts and children's dance.

Children and adults will experience Japanese culture by hearing, seeing and doing things Japanese.

Among those contributing to the Children's Day are the Asia Resource Center of the University of Missouri-St. Louis; the Crunden-Martin Manufacturing Company; the St. Louis Chapter of the Japanese American Citizens League; the Missouri Botanical Garden; the Office of International Studies of Washington University; the St. Louis Parks and Recreation Department; the Riverwind Kite Works; the St. Louis Regional Commerce and Growth Association; the St. Louis Section, National Council of Jewish Women; the Sister City Committees of St. Louis and Suwa; and numerous advisors from the Japanese community of St. Louis.

GARDEN BOUQUETS

"Gentlemen:

On a recent visit to the Garden we had a most delightful and informative experience through the help of Mr. L. Kohn, who volunteered to be our guide. His expertise and enthusiasm for the Garden made our trip a most enjoyable and memorable one.

Sincerely yours,
Mary and Felix Tuger

P.S. The other couple that was with us, Dr. and Mrs. Don A. Livingston, also expressed their appreciation."

Japanese Festival Day

Mothers Day, Sunday, May 8, will be Japanese Festival Day at the Garden, sponsored by the Japanese American Citizens League. Colorful elements of the day-long celebration of Japanese culture will include:

- — The Taiko Drummers from San Francisco;
- — The Aikido Martial Arts Troupe from Chicago;
- — Flower arrangement by Ikebana International;
- — Kitemaking by Tal Streeter of New York;
- — Bonsai demonstrations, pottery and calligraphy;
- — Kimono modeling by the Harusame Club;
- — Koto playing, a tea ceremony and various arts and crafts, some created by the children of St. Louis and Suwa, Japan;
- — The Sakura Dancers, St. Louis Children's group.

Garden Members will be admitted without charge to the Festival. There will be no charge for the festival for non-members, beyond the regular Garden gate admission price.

For the occasion, free shuttle bus service will be available between the Garden and the Arena parking lot, beginning at 10 a.m.

Calligraphy Panels Are Garden Gift

A set of historic Japanese calligraphy panels, fashioned in 1920 by a Japanese prince who had visited the Imperial Japanese Garden at the 1904 St. Louis World's Fair, will be presented to the Missouri Botanical Garden at the time of the May 5 dedication of the new Japanese Garden.

The panels are a gift of Mrs. Ruth Kacho, whose late husband was the grandson of Prince Fushimi, who visited the World's Fair and fashioned the 12 panels.

Each more than five feet tall and 24 inches wide, the panels were created by applying modified Japanese writing, based on Chinese characters, to large sheets of paper capable of absorbing the ink of the characters.

Officers and committee members of the Newly-formed Tower Grove House Auxiliary are, clockwise from left, Mrs. L. G. Akers, Mrs. Robert Grote, Mrs. Rovert M. Siegmund, Mrs. J. Edgar Lumpkin, Mrs. Pierre Grace, Mrs. Edward W. Hill, Mrs. Erwin Breihan, Mrs. Victor A. Silber and Mrs. David Lynch.

Arboretum Schedules Wildflower Walks

The native wildflowers of the northern Ozark region, on display exactly as they grow, will be the subjects of a series of informative wildflower walks to be hosted in May by the Shaw Arboretum in Gray Summit, Mo.

The wildflower walks will be held each Tuesday during the month, from 10 a.m. to 2 p.m., and will take place along the Arboretum's extensive woodland trail system. Garden Members are welcome to take part free of charge, and are asked to dress as the weather dictates, wear comfortable walking shoes and bring a sack lunch with drink.

Betty Nellums and Nell Menke, local naturalists, will conduct the walks. They will gather each Tuesday during the month at 10 a.m., at the Arboretum visitor center. Members may attend a single session or, to view the progression of wildflower blooming in spring, may choose to attend several.

For non-members, there is no charge for the wildflower walks except for the regular Arboretum admission charge, $1.00 for adults and $.50 for children. Additional information is available by calling 772-7600, extension 81.

Historic Homes Tour Scheduled For May 14

The third annual Shaw Neighborhood Historic Homes Tour will be held Saturday, May 14, from 10 a.m. until 5 p.m.

Featured on the tour this year will be Tower Grove House, Henry Shaw's Townhouse, two homes on Flora Place, a totally renovated four-family residence, a home on Shaw Place and two apartments recycled into a single family townhouse.

Due to the large number of requests, the Compton Hill Water Tower in Reservoir Park will again be included on the tour. In all, 15 locations will be open to visitors.

Double-decker buses will provide transportation to the various locations for a one-time charge of 25¢ per person.

The tour has been extended by one hour this year to enable everyone to visit all locations. A Shaw Tour Rest Area will be located at St. Margaret of Scotland Catholic Church, where restrooms and refreshments will be available.

The Shaw Neighborhood is the area bounded by the Missouri Botanical Garden on the west, Interstate 44 on the north, Grand Boulevard on the east and Tower Grove Park on the south.

Advance tickets may be purchased at the Garden Gate Shop and the Eugene Field Museum, or by mail to S.N.I.A., 2211 S. 39th St., St. Louis, Mo. 63110. Tickets are $3.50 in advance and $4.00 the day of the tour. For more information, please call 773-8166 or 771-3101 during weekly business hours.

Gail Gorski, of the Garden's horticultural staff explains gardening methods during a recent Rose Workshop at the Garden.

The MISSOURI BOTANICAL GARDEN BULLETIN is published 12 issues per year monthly by the Missouri Botanical Garden, 2345 Tower Grove Avenue, St. Louis, Mo. 63110. Second class postage paid at St. Louis, Mo. $5.00 per year. $6.00 foreign.

Pitzman Program To Begin June 20

Beginning June 20 and continuing through July, the Pitzman Summer Nature Program will again provide adults and children with the opportunity to take part in unusual nature experiences both at the Garden and the Shaw Arboretum.

The schedule:

Family events: nature activities for parents and children provide many interesting and absorbing activities that stimulate learning and shared experiences while working with plants. Two four-day sessions will be given – one at the Garden and the other at the Arboretum. Many of the activities can be repeated at home and will help form new ideas for exploring the marvelous kingdom of living, green plants.

The Garden session will be held July 5 through 8 at the John S. Lehmann Building. We will once again make terrariums, plant dish gardens, and grow plants from seeds and cuttings. There will also be visits to the Japanese Garden, Herb Garden and the Garden's large greenhouses: the Climatron, Desert House, and Mediterranean House. Fee: $9/person. $7.50/Member. Time: 10:00 a.m. to 2:00 p.m. For further information, call the Education Department at 772-7600.

Sense of Wonder: one of the most popular and rewarding of the Shaw Arboretum programs in recent years has been the "Sense of Wonder," a parent-child program aimed at cultivating relationships through outdoor activity. Parent-child activities will focus on feelings and understandings about the natural world. Two sessions will be offered.

Session I, June 20-24, for children aged 4 to 6 years and accompanying adults, meets from 9 a.m. to 1 p.m. Monday, Tuesday and Thursday. Evening picnic supper session will be held Friday, 6 p.m.-9 p.m. Fee: $8/person, $7/Member.

Session II, June 27-July 1, for children aged 7 to 10 years and accompanying adults, meets from 9 a.m. to 1 p.m. Monday, Tuesday and Thursday. Evening picnic and optional overnight on Friday at 6 p.m. Fee: $9/person, $7.50/Member.

Natural Awareness: the Shaw Arboretum Staff has worked in the past two years on development of a strong "Natural Awareness" program, days of excitement and close contact with the natural world. Highlights of past years have included wading a long stretch of creek, personal magic spots, close views of deer and other animals, and close contact with outstanding outdoors people. Small groups assure maximum safety and attention. Two sessions will be offered. Both sessions meet Tuesday through Friday, with optional Parents Day on Saturday. Older children, aged 10-12 yrs., will have optional overnight, Thursday evening (additional fee). Fee includes bus transportation to and from Shaw Arboretum, Tuesday thru Friday.

Fee: $20/child, $18.50/Member. Dates: Session I – July 12-16; Session II – July 26-30.

Natural Awareness – Advanced: some children return to the Arboretum year after year. In an effort to provide special experiences for the older, returning participants, the Shaw Arboretum offers "Natural Awareness – Advanced." Activities from previous years will be highlighted along with new activities to develop understandings of the natural world. Especially small groups will make a high-impact experience possible. One session will be offered. Participants will come by bus to the Arboretum Monday, Tuesday and Wednesday (double overnight) and return to bus pickup Friday afternoon, 4 p.m. Fee includes bus transportation and food.

Fee: $30.00/child, $27.50/Member. Dates: July 25-29.

Four Days on the Meramec: the Lower Meramec River represents an important resource to the St. Louis area, and an interesting section of stream for canoe trips. In cooperation with Project STREAM (St. Louis Regional Experiential Adventure Movement), the Shaw Arboretum offers a four-day trip in the Meramec Basin. Participants will receive instruction in canoeing skills, basic ecology of the Meramec Basin, and natural awareness techniques, while traveling in a beautiful natural environment. Two sessions will be offered. Student ages: 12-14 years. Meets at 9 a.m. Monday, at Missouri Botanical Garden Staff Entrance, and returns 4 p.m. Thursday.

Fee: $40.00/child, $36.00/Member. Dates: Session I: July 11-14; Session II: July 18-21.

The Green Machine: this program is a five day exploration of plant life from around the world, to explore tropical life in the Climatron; experience a bit of another culture in the Japanese Garden; look at arid life in the Desert House; and deliberately get our hands dirty acquiring a few gardening skills. Children will work in small groups with a Garden Staff Member to encourage participation and promote memorable learning experiences. No bus pickups provided for this program.

A special overnight experience in the Climatron is planned for children 10-14 years old. The number of spaces for this is limited.

Fee: $16/person, $14/Member. Time: 10:30 a.m. – 2:30 p.m. Session I, July 18-22; Session II, August 1-5.

A ROSE EVENING

A Rose Evening at the Missouri Botanical Garden.
Sponsored by Chrysler Plymouth South.
Friday, June 10, 1977, 5 to 7:30 p.m.
Music by the Terry Thompson Band.

Garden Botanist Returns With New African

In mid-January, during the height of the St. Louis area's worst winter weather, Dr. Peter Goldblatt returned to the Garden after nearly six months of intensive field study among the plants of sunny South Africa.

But he came back with something more than fond memories of the South African climate.

Dr. Goldblatt, B.A. Krukoff Curator of African Botany at the Garden, returned with several hundred collections of dried and living plant specimens, among them several species new to science and what seems to be a new genus of Iridaceae.

"Botanically," said Dr. Goldblatt, "it was extremely exciting to find a new genus in a place where botanists have been before, for nearly two hundred years."

A specialist in the systematics and evolution of the Iridaceae, Dr. Goldblatt has made two field trips to South Africa since coming to the Garden in 1972. His most recent – and most successful – expedition began last July in the Cape Region of South Africa, the southwestern corner of the African continent.

The area, unlike the rest of sub-Saharan Africa, receives winter rainfall and has dry summers – a climate much like that of California. The region is very rich in bulbous plants.

Some of the new species, like a tiny sub-alpine *Moraea,* were overlooked by botanists in the past because of their small size and inconspicuous flowers. It remained for a specialist to discover them.

Others like two tall, large flowered *Homeria,* which had evidently never been collected before, were overlooked for other reasons, possibly because they are fire responsive and bloom only after infrequent bush fires. Dr. Goldblatt simply happened to find them in the one year in perhaps twenty when flowering took place.

One of the new species of *Homeria,* which has a large bright yellow flower and bright red protruding anthers, appears to be well worth garden attention, and will be introduced to horticulture in the coming years if it proves amenable to cultivation. It will be first tried out in the Mediterranean House at the Garden next year.

When Dr. Goldblatt first came to work at the Garden, he worked on a federal government funded project to study drug yielding poppies in the Middle East. When this research project was brought to a successful conclusion two years later he discovered a high narcotic-alkaloid yielding strain of *Papaver bracteatum,* and brought back seed to the United States. Subsequently, the seed was distributed by the U.S. Department of Agriculture to several field stations throughout the country and to selected pharmaceutical companies for trial growing. With his role in this multimillion dollar botanical and agricultural project completed, Dr. Goldblatt turned his attention to his old interests, the systematics and evolution of the Iridaceae, the Iris family.

Dr. Peter Goldblatt

This family is of major horticultural significance as it includes not only the genus *Iris,* but also *Gladiolus, Crocus,* and *Freesia,* as well as many other, not so well known garden plants. The family is centered in Africa and more than half the total species, approximately 1,000 in number, are native to Africa south of the Sahara. In carrying out his researches on Iridaceae, Dr. Goldblatt has been able to undertake the two field trips to Africa through grants from the National Science Foundation. Field work, always important in modern botanical studies, is especially im-

The tiny sub-Alpine Moraea *of the South African continent, undiscovered for many years until Dr. Goldblatt's expedition.*

cies

portant in certain plant families, among these the Iridaceae, because the delicate flowers of most species preserve badly when pressed and made into herbarium specimens. Observing live plants in their native habitats is therefore of fundamental importance in studying Iridaceae. Dr. Goldblatt has a second purpose in field work — to collect seed, bulbs and corms to bring back to St. Louis for growth and further study, especially cytological investigation.

Also among Dr. Goldblatt's duties is the supervision of weekly botany seminars. Recently, Dr. G.L. Stebbins, emeritus professor of genetics at the University of California, Davis, was at the Garden to conduct two such seminars for faculty members and graduate students from local universities.

Dr. Stebbins' subjects were "Chromosomal Evolution and DNA Content in Higher Plants" and "Estimating Quantitative Differences Between Local Florulas."

Varieties of flowering Homeria, *among the species new to science which Dr. Goldblatt brought to St. Louis, Some grow as tall as two or three feet and were previously undiscovered because they bloom only after infrequent bush fires. Others bloom with bright yellow flowers and red protruding anthers.*

International Studies Group Hosted by Garden

Appearances by Michael Straight, deputy chairman of the National Endowment for the Arts, and Ralph T. Coe, director of the Nelson Gallery of Art in Kansas City, were among the highlights of an International Studies Association Conference held recently at the Garden.

The International Studies Association, a multidisciplinary professional organization involved in international studies, held its 18th Annual Conference in St. Louis.

Conference sessions included:

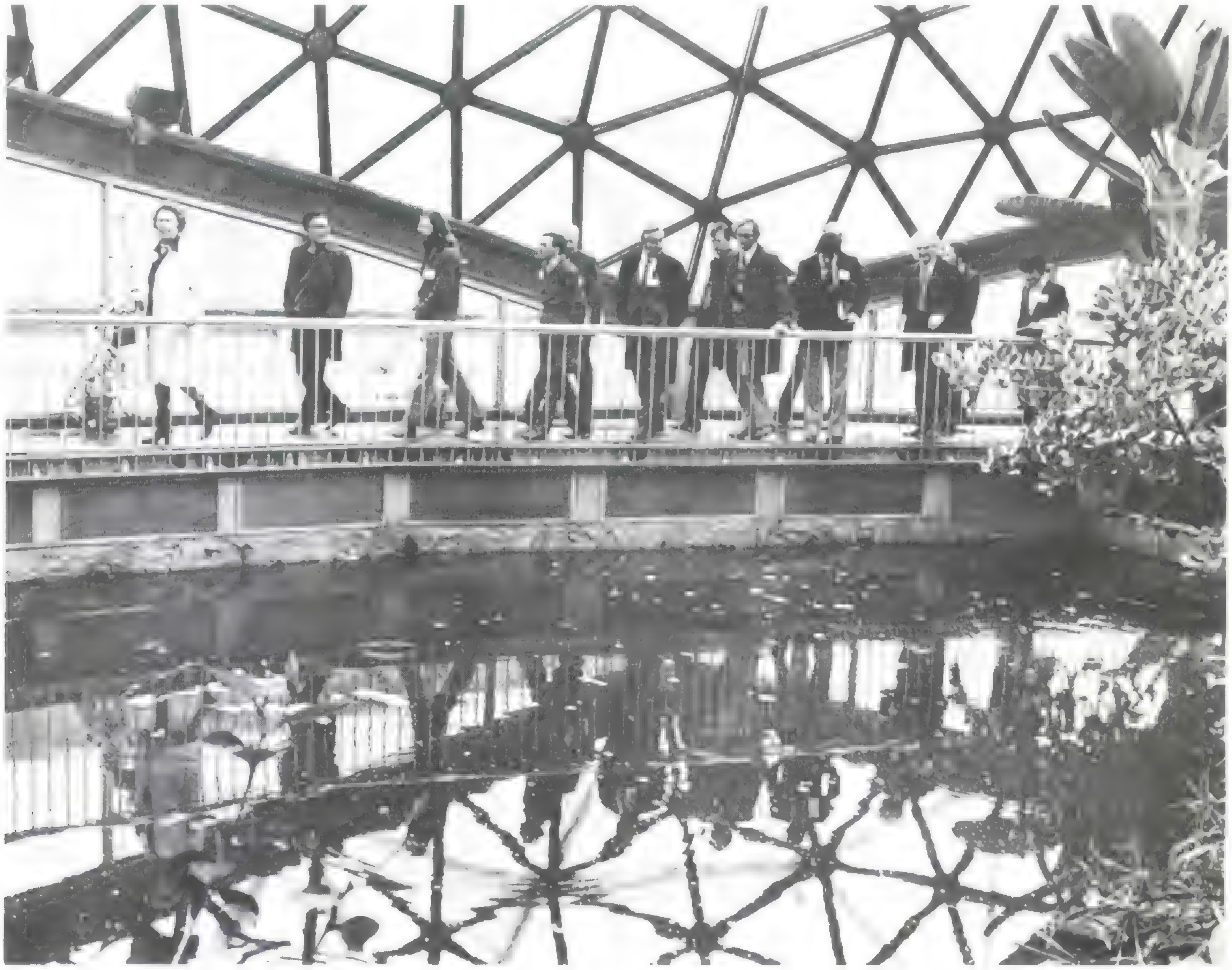
– "Transfer of Culture," the opening address by Michael Straight, who spoke on the role of the arts in international relations. Mr. Straight since 1969 has been deputy chairman of the National Endowment for the Arts, the federal agency created to encourage and assist the nation's cultural resources.

– A presentation by Ralph T. Coe, with slides, of the Chinese Exhibit and American Indian Show from the Nelson Gallery of Art. Mr. Coe is former assistant curator at the National Gallery of Art in Washington, D.C., and was recently named director of the Nelson Gallery.

– Dr. William M. Klein, assistant director of the Missouri Botanical Garden, discussed the development of the new Japanese Garden here, scheduled for dedication on May 5. Dr. Klein addressed the Japanese Garden as an art form and discussed its role in promoting international relations.

Among the participants in the recent International Studies Association Conference were Michael Straight, deputy chairman of the National Endowment for the Arts, right, and Dr. William M. Klein, the Garden's assistant director.

The conference session was chaired by Dr. Jonathan David Aronson, assistant professor of International Relations, and director, Mid-Career Masters Program, School of International Relations, the University of Southern California.



Conference participants tour the Climatron.

Environmental Education: Kid-Power in Action

Spring is a time for fruition at the Garden, and the colorful display of flowering plants bears witness to the staff's winter labors.

In the Environmental Education Training Project, too, a winter of hard work has yielded its rewards. Since last August, the project has provided ongoing training to 19 teachers employed in city schools. The project is a cooperative program between the St. Louis Public Schools and the Missouri Botanical Garden, funded by a grant to the city schools from the U.S.O.E. Office of Environmental Education.

On this page are displayed a few of the classroom programs created by teachers trained in the project.

Kathleen Kenny's class at Adams School dramatizes the effect of pollution on plants and animals. Here two students role-play fish living in a polluted environment. (Photo courtesy St. Louis Public Schools)

Marian Junge's class at Mason School is collecting litter for a twofold purpose. One is to beautify the streets in front of the school grounds; the other, to learn about resource conservation. In the classroom, students will analyze the litter and make suggestions about eliminating some of it at its source of production.

HAVE
DREAMS

A student in Pauline Humphrey's class at Laclede School explains how a plant grows, highlighting its dependence on sunlight, air, and water.

GARDENING IN MAY

As springtime becomes a reality, weather damage done this past winter can now be fully assessed and corrective steps taken to get the plants back into good condition.

Plants which were frozen back severely and were partially pruned back should now be pruned back to where the new breaks are coming. It may be necessary in some cases to thin out some of the growth, as some of these plants will produce an excess number of ends. It is wise to remove a number of the weaker growth, keeping only the sturdiest ones and letting these develop under normal conditions.

Spring flowering shrubs, such as the forsythia, azaleas, and rhododendrons, should now be pruned to reshape the plants and given a light feeding of a balanced fertilizer. In many cases, the plants are chloratic with pale, yellow green leaves instead of deep green leaves. This should be corrected with a feeding of iron chelate and epsom salts, using one tablespoon of each to a gallon of water and applying two to three gallons for each plant that is two to three feet high. Increase the amount according to the size of the plant.

Avoid cultivating around many of these plants as the roots are produced near the surface. It is much better to apply cottonseed meal or recommended fertilizers for these plants by broadcasting it and coming in with extra mulch over the top. Once the fertilizer has been put on and the ground is dry, you should soak this in with a light watering.

SPRING BEDDING

Spring bedding should now be done in earnest and you might want to consider planting a number of the new geraniums which are grown from seed. These are excellent plants for the St. Louis area, as they stay very compact, are very heavy flowering and flower until late fall. The plants should be placed where they get plenty of sun during the day and given occasional feedings of a liquid fertilizer.

Geraniums grown from seed are superior to those grown from cuttings, in that they are more compact and freer flowering. They come in shades from white through pink, orange, and deep red.

Good plants for the semi-shaded area for the St. Louis area are some of the newer Impatiens which come in wide ranges of colors; caladiums, the bulbs of which can be planted directly in the garden immediately, or where the bulbs have been started earlier, can be set out from mid-May on; coleus, available in several new cultivars are excellent plants for the semi-shaded areas; fibrous begonias which make excellent plants for the semi-shade as well or in full sun as you noticed in the main flower beds located between the Main Gate and the Climatron this past year.

FEEDING SPRING BULBS

Spring bulbs which have flowered should be given a good feeding of a balanced fertilizer and locations should carefully be marked if you are going to be planting annuals later on. In most cases the annuals can be set in amongst the plants and have the tops removed from the bulbs three weeks after the last flowers are gone.

Tulips and daffodil bulbs failed to bloom in some cases due to severe ground freezing, which didn't allow the plants to produce an adequate root system.

A light application of superphosphate, followed with a feeding of a regular fertilizer such as a 5-10-5, will put these back in good condition for next year.

Bulbs which have become overly thick and are not flowering for that reason should be lifted as soon as they start to go yellow. The bulbs should be stored in a dry, well ventilated area and tops should be removed when the bulbs are cleaned and stored until planting back next fall.

VEGETABLE PLANTS

All warm vegetable plants can be planted this month after preparing the soil well, adding extra organic matter in the form of leaf mold or compost with an application of superphosphate. Select plants which are disease resistant for best results. Plants should be watered in with a weak feeding of a liquid fertilizer and mulched with plenty of mulch to prevent weeds from growing and to control soil moisture.

Treatment for Dutch elm disease, as outlined in the earlier Bulletin, can be started anytime this month. Have the trees checked by a qualified arborist and any necessary pruning should be done at the same time. It may also be wise to have the trees root-fed at the time of the treatment to get them into a good vigorous condition.

Raised planters or beds are excellent for growing many of the vegetables. Prepared soil mixes, such as metro-mix 200 and 300, are excellent for growing any of these plants. The material has been well sterilized and slow released fertilizer has been added for best results. However, once the plants are set in, it is recommended that the plants be fed at a two week interval with a light feeding of a balanced fertilizer to keep them in a good condition.

ROSES

Roses growing actively now may benefit from a feeding of a liquid fertilizer such as Peter's 20-20-20, to encourage good flowering. In some cases, epsom salts at the rate of one tablespoon per quart of water will help to give better color in the leaves and produce more scented flowers.

— Robert J. Dingwall
Chief Horticulturist

Joni Duggins, the storyteller butterfly, entertains a group of children during the recent "Week of the Young Children" at the Garden.

Botany Staff to Conduct Mark Twain Institute Course

A course in plant introduction, demonstrating the basic principles of plant biology, will be conducted by the Garden's Department of Botany staff this summer as part of the program of the Mark Twain Summer Institute.

Classes will be held at the Garden, utilizing the Garden's extensive collection of living and preserved plant specimens. In addition, field trips are planned to natural and managed plant communities.

The course will run from Monday, June 13, until Friday, July 22, with students attending classes from 9 a.m. to 12:30 p.m. Monday through Friday. The Mark Twain Summer Institute, established to provide academically able secondary school students with challenging and worthwhile educational opportunities, is a member institution of the Arts and Education Fund.

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MISSOURI BOTANICAL GARDEN BULLETIN
2345 Tower Grove Avenue
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Missouri
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Bulletin

Garden-School Program a 'Natural' for 225 Children

With funds made possible through a federal grant under the Emergency School Aid Act (ESAA), Susan McNamara of the Missouri Botanical Garden education staff and John Doty of the Shaw Arboretum education staff designed and implemented a plant science program, which was offered during the 1976-77 school year in one of the city's new Magnet Schools.

Bob Powers, coordinator for the Plant and Animal Ecology Program at the Stix Investigative Learning Center, served as liaison with Garden staff and teachers at the Stix Center.

Two hundred and twenty-five children in grades four through eight visited the Garden once a month for a planned activity and followed each field trip with a learning session in their own school classrooms or laboratories.

Each class also spent a total of three days at Shaw Arboretum in Gray Summit, giving them onsite first-hand experiences with growing things. The fifth-grade students culminated their program with a three-day camping experience at the Arboretum experimental resident center.

The sixth-grade students, as a special project worked both with the Garden education staff and the ecological services department in determining the elements that go into a park. They then designed their own park which was on display at the Lashly Branch of the St. Louis Public Library through the month of May.

Magnet School children take part in a spring growth hunt outside the John S. Lehmann Building, right, Their reactions: "As I crawled around the corner, I felt like I was in heaven"; and "I remember it was a real good piece of nature."

Inset, upper right, small hands transplant seedlings.

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June 1977

Members of the American Association of Botanical Gardens and Arboreta, during a recent annual conference at the Garden, tour the Japanese Garden.

AABGA Conference Brings Botanical Specialists to Garden

For four days in late April, some 200 directors and staff members of botanical gardens, arboreta and educational centers involved in public horticulture in the United States and Canada came together in St. Louis to exchange ideas, insights and experience on common professional goals and problems.

The Missouri Botanical Garden was host institution for this prestigious annual meeting of the American Association of Botanical Gardens and Arboreta, which also included tours of the Garden, Shaw Arboretum and special gardens in the St. Louis area.

The meetings brought into focus the need for master planning and explored the role of the landscape architect in interpreting these needs, the ways in which botanical gardens meet their goals and serve their publics, funding sources and how to initiate and develop these sources.

Highlights of the convention were addresses by Dr. Peter H. Raven, Director of the Missouri Botanical Garden, on "The History and Development of the Missouri Botanical Garden and the Design of the Garden from the Botanical Point of View;" and by:

– John Simonds, senior partner of Environmental Planning and Design, Pittsburgh, whose firm developed the master plan for the Missouri Botanical Garden, on "The Role of the Landscape Architect in Botanical Garden Development;"

– Professor Koichi Kawana, Professor of Art at the University of California, Los Angeles, designer of Seiwa-En, the Japanese Garden, on "Symbolism and Esthetics in the Traditional Japanese Garden;"

– Harry Weese, member of the National Council on the Arts and a nationally known architect and urban designer, whose talk "Beyond Architecture" examined the role and environmental impact of architecture in the urban setting.

In other developments it was announced by Dr. Roy Taylor, president of the AABGA, that the association's first part-time executive director, for the next two years, is Mildred E. Mathias, emeritus professor of botany at the University of California, Los Angeles, who in her graduate school days at Washington University was associated with the Missouri Botanical Garden.

The custom-planned garden tours, arranged by St. Louis Scene, Inc., visited Mr. and Mrs. C.C. Johnson Spink's garden, designed by Harriet Bakewell; the Robert Wolfson residence, for which Stuart Mertz was landscape architect, and the Chesterfield Mall, where interior and exterior landscaping was done by Robert E. Goetz. AABGA members also toured the Missouri Botanical Garden and Shaw Arboretum during their stay.

The text of the AABGA conference address by Professor Koichi Kawana of the University of California at Los Angeles, designer of the Japanese Garden, is reprinted on Pages 7, 8 and 9 of this month's *Bulletin*.

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Engelmann Spruce Planted at Garden

During the recent meeting of the American Association of Botanical Gardens and Arboreta in St. Louis, a tree of the Engelmann spruce, *Picea engelmannii,* was planted between the Museum and the Administration Building by the Garden's Director, Dr. Peter H. Raven, and Dr. William G. Gambill, Director of the Denver Botanic Gardens.

The tree, together with two others to be planted later in the spring, commemorate the memory of Dr. George Engelmann, an associate of Henry Shaw for more than 30 years as Shaw's botanical and scientific advisor.

Engelmann specialized in the study of conifers and in the study of the flora of the West, so it is appropriate that his name is associated with this western spruce. The name for the species was first suggested in 1863 by Dr. C.C. Parry of Denver in a letter recorded in the Transactions of the Academy of Science of St. Louis. Parry described his impressions of the plants he observed and collected while climbing Pike's Peak.

"My attention having been particularly directed to this species by Dr. Engelmann, I became soon satisfied, in pursuing the investigation, that this was in fact a single undescribed species. . . to which, accordingly, I have ventured to affix the name of its actual discoverer, calling it *Abies engelmanni.*"

The detailed scientific description and discussion of the species was written by Engelmann himself and appeared later in the same volume of the Transactions under the present name, *Picea engelmannii.*

The type specimen of this species is preserved in the herbarium. It consists of several branches and cones and was collected from Clear Creek bottom, near Empire City, Colo. This specimen is the ultimate standard on which judgment concerning the application of the name *Picea engelmannii* must be based. The cones on the newly planted tree, which was collected from a locality near Webster, Colo., about 10 miles south of Empire City, match those on the type. We are confident that the tree planted to commemorate Engelmann is the same species that was named for him.

Garden-to-Gallery Program

The correlation between forms in nature and their counterparts in art will be explored Saturday, July 9, at a joint family presentation given by the Missouri Botanical Garden and the St. Louis Art Museum.

The garden-to-gallery program will begin at the Garden and conclude at the museum. Participants are asked to wear comfortable shoes and come prepared to walk. Reservations can be made through the Garden Education Department, 772-7600.

An Engelmann Spruce, in memory of Dr. George Engelmann, was planted at the Garden during the recent AABGA conference. On hand for the planting are, from left, Dr. William G. Gambill, director of the Denver Botanic Gardens; Dr. Peter H. Raven, director of the Missouri Botanical Garden; and Dr. Marshall Crosby, head of the Garden's Botany Department.

Henry Shaw Cactus Society Show

Preparations are underway for the largest annual cactus show in the Midwest, the annual show of the Henry Shaw Cactus Society, to be held in the Floral Display House August 27 through September 5.

Entries in 111 classes will compete for a silver trophy. Junior members, aged 5 to 15, will also compete and this year for the first time a new class for photography and painting has been added.

The Henry Shaw Cactus Society celebrated its thirty-fifth anniversary at a banquet at Heritage House June 4. Speaker was Joyce Tate, author of "The Cactus Cookbook," who presented a slideshow, "Aloe '75: Adventures in Rhodesia."

Henry Shaw Cactus Society was founded in July 1942, by the late Ladislaus Cutak of the Missouri Botanical Garden. The organization now has more than 200 members in 17 states and foreign countries.

Further information on the cactus society may be obtained from the society vice-president and show chairman, Mrs. Betty Demzik, 7 Frontenac Estates, 567-1383.

Garden Visitors

The Floral Display House is packed with plants and people during a preview party for the Garden's Spring Flower Show.

The Desert House is a tour site during a recent Arts and Education Campaign Kick-off Luncheon.

Professor Koichi Kawana, designer of the Japanese Garden, toasts the new development after closing the valve to fill up the Japanese Garden lake.

Dr. Marshall Crosby, right, head of the Garden's Botany Department, describes herbarium activities during a recent tour by 65 high-ranking NATO officers from the NATO War College. The tour was arranged by Michael Witunski of McDonnell Douglas Corporation.

Dr. Raven Elected to National Academy of Sciences

Dr. Peter H. Raven, Garden director, Engelmann Professor of Botany at Washington University and Adjunct Professor of Biology at St. Louis University and the University of Missouri-St. Louis, has been elected to membership in the National Academy of Sciences, one of the highest honors that can be accorded to an American scientist or engineer. The National Academy of Sciences is a private organization of scientists and engineers established by Congressional Act of Incorporation in 1863.

Dr. Raven was elected to the Academy in recognition of his distinguished and continuing achievements in original research. He is a recognized specialist in plant systematics, the classification of plants, and in the evolutionary relationships between plants and insects. Dr. Raven is the author of six books and more than 200 scientific papers.

Of the 60 American scientists honored this year Dr. Raven was the only St. Louisan to be inducted by the Academy. He brings to nine the number of Washington University faculty members who are in the Academy.

Dr. Raven completed his undergraduate work at the University of California, Berkeley, in 1957 and received his Ph.D. in plant sciences from the University of California, Los Angeles. In 1960-61 he was a National Science Foundation Postdoctoral Fellow at the British Museum; in 1961-62 Taxonomist and Curator, Rancho Santa Ana Botanic Garden, Claremont. Ca.; Assistant then Associate Professor, Stanford (Ca.) University, 1962-71. While on a sabbatical in 1969-70 he served as senior research fellow at the New Zealand Department of Scientific and Industrial Research.

Director of the Missouri Botanical Garden since 1971, Dr. Raven has placed major emphasis on the development of the Garden's display features, including the new Japanese Garden. He has also obtained a number of federal grants supporting the scientific research programs at the Garden, a vital element in the Garden's three-fold purpose of research, education and display.

An Evening of Roses

An Evening of Roses, featuring the colorful displays of the North Rose Garden and the Anne L. Lehmann Rose Garden, will be held at the Garden from 5 to 7:30 p.m. on Friday, June 10.

The event is sponsored by Chrysler-Plymouth South and will include music, refreshments and a special display of prints, rare books and original art work with a rose theme, in the Lehmann Building Library.

The North Rose Garden, adjacent to the Garden's historic Linnaean House, was established in 1917 and today represents an important display of rare and prize-winning hybrid roses. North Rose Garden rosebeds are planted by variety, with each bed containing a single type of rose to demonstrate the various colors and forms included within a type.

The Anne L. Lehmann Rose Garden, northwest of Tower Grove House, was dedicated in 1976. It lies between a graceful gazebo on the south and the beautiful Shapleigh Fountain on the north, with rose varieties planted by color to insure that any number of varieties may be found in a single bed.

Additionally, plantings in the Lehmann Rose Garden have been carried out scientifically, so that patterns of color migrate up and down the oval garden as the seasons change and the various varieties come to bloom.

The Evening of Roses is open to all Garden members.

Symphony Concert

An evening concert by the St. Louis Symphony Orchestra will be held in the Garden on Saturday, July 9, at 7:30 p.m., with Gerhardt Zimmermann conducting. Admission will be charged.

A program of Brahms and Wagner is planned.

Dr. Peter H. Raven, Garden director, second from left, escorts Garden tour during a recent American Bar Association visit. With Dr. Raven is Bertram Tremayne, Clayton attorney and president-elect of Missouri Bar Association.

Specimen Number 2.5 Million Recorded at Garden Herbarium

"How many specimens do you have?" is a question frequently asked by visitors to the herbarium, which houses the Garden's voluminous dried plant collections. For the past year or so the answer has been, "about 2.5 million." The answer has been imprecise, because although each new specimen receives an accession number and the numbers have been steadily approaching 2.5 million, many old specimens have never been numbered.

The herbarium's system of numbering each specimen was introduced in 1913. But at that time the herbarium already contained about 750,000 collections, which it had been accumulating since about 1860. Many of these early specimens still remain unstamped and unaccessioned so that the highest stamped number does not accurately reflect the actual size of the herbarium.

Specimen number 2.5 million is stamped at the Garden herbarium. On hand for the herbarium milestone are, from left, Howard F. Baer, Member Garden Board of Trustees; Dr. Peter H. Raven, Garden director; Tom K. Smith, Jr., president of the Garden Board of Trustees; and Dr. Marshall Crosby, head of the Garden's Botany Department.

On April 19 specimen number 2,500,000 was stamped by Tom K. Smith, Jr., President of the Board of Trustees. To emphasize the need for stamping many old specimens, a collection made on Pike's Peak in 1862 was chosen — the type specimen of the Bristle Cone Pine, *Pinus aristata,* which was described by Dr. George Engelmann in 1863. Although we can now say accurately that there are 2.5 million specimens in the herbarium, as many as 200,000 old specimens remain to be numbered. So far this year more than 10,000 of these have been located and stamped by the plant mounters and volunteers.

Each specimen needs to be stamped for several reasons. Not only does the accession number tell how many specimens are in the herbarium, the stamp also gives the location, "Missouri Botanical Garden Herbarium." Thus, when specimens are loaned to other institutions for study, their place of origin is easily identifiable to the borrower and assures the return of the specimens.

Further, since each specimen has its own number, it can be used by scientists when they wish to refer to a specific specimen in the herbarium, an important distinction when other information associated with a specimen is meager, or when several duplicate specimens of a given collection exist. Example: "The type of *Pinus aristata* Engelm. is Missouri Botanical Garden 2,500,000."

Garden Gate Shop Gifts

Wedding gifts, graduation gifts or the perfect gift for Father are available at the Garden Gate Shop as we look forward to a busy June.

The shop is featuring a summertime assortment of glasses, ice buckets, and serving pieces for informal entertaining. With the growing season upon us, we also feature garden statuary, outdoor pots and baskets as well as crystal bud vases of all sizes. We encourage everyone to visit the Garden Gate Shop for summer gifts and accessories.

Tea for Volunteers

National Volunteer Week, April 25 through May 1, was celebrated at the Garden with a tea for 450 Garden Volunteers, held at the home of Garden director, Dr. Peter Raven, and Mrs. Raven.

In honor of the new Japanese Garden, Japanese green tea complemented traditional Japanese cookies and other delicacies at the serving table. The tea was held in recognition of the many hours given each year by Garden Volunteers, in jobs that range from working in the grounds to helping with botanical research in the herbarium.

Volunteering time to the Garden is an excellent way to meet and work with staff members and other volunteers who share a common interest in horticulture. It is also a means of increasing your own horticultural knowledge.

In addition, there is the satisfaction of knowing you are helping where help is needed. The Garden could not maintain its high standards of performance at all levels of operation without its volunteers.

The tea was only a small way of expressing the Garden's deep gratitude to all its Volunteers.

If you are interested in information concerning the Garden's Volunteer program, please call Carol Taxman at 772-7600, extension 53, on Tuesday or Thursday mornings. One-half day a week is all that is necessary, and no previous experience is required.

Symbolism and Esthetics in the Japanese Garden

Professor Koichi Kawana

The typical traditional Japanese garden combines characteristics which have been developed over many centuries and which reflect the differing influences prevailing during particular periods of history. Some persons who have visited many such gardens deny the existence of a "typical traditional Japanese garden" claiming that the gardens they have seen differ greatly one from another. However, this is comparable to stating that an "average Japanese" does not exist because each Japanese is so different. Just as most Japanese share characteristics which can be identified, so it is possible in most cases to identify a traditional Japanese garden by analyzing its general appearance and savoring its atmosphere.

It should be noted that, until this century, such gardens were seldom if ever opened to the public. They were built by the ruling elite to meet their personal requirements or by temples to create in their surroundings a mood appropriate to worship and contemplation. *Shugaku-in,* one of the largest gardens in Kyoto, was built for a retired emperor so that he might spend his remaining years enjoying an undisturbed tranquility. The garden of the Silver Pavilion or *Ginkakuji* was created for the Shogun Ashikaga Yoshimasa in order that he might escape the maddening conflicts and violence taking place in the capital nearby. Japan's greatest general hoped to earn merit by initiating the building of the famous garden of the Katsura Detached Palace for the son of the reigning emperor.

Gardens or *niwa* provided a means of achieving the peace of mind that rulers sought for so desperately in the periods of strife and conflict which marked much of Japan's history. In its origin the garden was representative of utopia or, more often, a paradise of Buddha. Both concepts were derived from China. One, which came to Japan in the sixth century, was the product of China's ancient mythology. The other gained credence as Buddhism came to influence all sectors of Japanese life. Indigenous factors such as Japan's insularity also had an impact on the development of gardens.

The character of most of the famous gardens of today owe much of their development to the influence of Zen Buddhism which was brought from China in the thirteenth century and became a major influence in Japan in the two following centuries.

A real appreciation and understanding of the traditional Japanese garden is complex and difficult. The visual entities which may appear as a design in the Western sense of forms, textures, and colors are less important than the invisible philosophical, religious, and symbolic elements. This is shown clearly when the derivation and importance of the key elements present in some form in almost every garden of this type are examined. These elements include water, islands or stones, plants and garden accessories.

Symbolism

Japan is a group of islands surrounded by oceans and seas. From ancient times, the Japanese people had an affinity for the sea. Water as a design element in the garden is crucial. One of the most popular styles of garden is called *chisen* in which a pond or lake occupies the most significant portion of the garden. Water's importance is not as a substance but as a symbol and expression of the sea. Even the quantity of water present is unimportant. If space is a problem, one is supposed to be able to enjoy the tranquility of the sea in contemplation of a bucketful of water contained in a stone water basin.

The presence of water itself is not required. In the dry garden or *karesansui* style, the sea is symbolized by gray gravel or sand and the state of the sea is expressed by sand patterns or *samon* created by raking the sand to form certain designs.

A sea without islands is unthinkable and in the creation of such islands the Japanese owe much to the concepts imported from China mentioned previously. One of the earliest developments was the *shinsen-shiso,* a utopia or sacred place remote from ordinary human society. In this tradition an island of immortal and everlasting happiness called *horaisan* or *horaijima* became an important element in the garden. Later, as a result of the growth of Buddhism, the sacred island was replaced by *schumisen,* the legendary mountain on which Buddha was believed to have lived. Often the names were used interchangeably.

Crane and tortoise islands belong in this category. According to Chinese mythology, the crane lives a thousand years and the tortoise ten thousand years. Symbols of auspiciousness and longevity, the actual beings are often simulated by the shape of the islands. Another auspicious symbol is the *kibune* or treasure ship which sails the seas and is represented often by a rock or group of rocks.

Such islands, due to their sacred character, are inaccessible to human beings and no bridges are constructed to reach them. In contrast, ordinary islands called *nakajima* are accessible to the mainland by

(Continued on next page)

bridges and it is on these latter islands that one may find teahouses and arbors.

In dry gardens, islands are symbolized by rocks of interesting shapes set in gravel or sand. Groups of stones representing a rocky seashore may be arranged near the edge of a lake or its gravel or sand depiction. The "three Buddha" arrangement called *sanson* is one of the most orthodox styles in the art of stone arrangement. It consists of three rather vertical stones. The largest stone which is always placed in the center represents the Buddha while the two smaller stones placed nearby represent two Bodhisattvas. This arrangement is used commonly to express *horaisan, shumisen,* or a waterfall.

Trees and plants used in the garden are closely interwoven with the spiritual and physical life of the Japanese people. The pine is a major basic structural tree. Traditionally it is called *tokiwa* and, as an evergreen, it expresses both longevity and happiness. The black and red pines symbolize the positive and negative forces in the universe. The Japanese black or male pine called *omatsu* represents the former force and the red or female pine called *mematsu* represents the latter force.

Bamboo is usually found in such gardens and plum trees are often grown there. Combinations of pine, bamboo, and plum are used in decorations to mark the New Year and the most auspicious occasions. Bamboo is an evergreen also and is credited with auspicious characteristics similar to those of the pine while the plum is thought to embody the qualities of vigor and patience since it is the first to bloom after a severe winter.

Esthetics

Many unique Japanese concepts and esthetics involved in traditional Japanese gardens stem from Zen Buddhism. Whereas the previous importation of Buddhism had come from Tang China, Zen concepts came from Sung China. Its influence on the art and architecture of the country has been impressive and lasting.

Esthetic values which are believed by both Japanese and Westerners to be uniquely Japanese in origin such as simplicity, naturalness, refined elegance, subtlety and the use of the suggestive rather than the descriptive mode of communication are either products of Zen thought or were reinforced by it. It is said to be impossible to describe Zen in words since the doctrine denies this possibility. The doctrine rejects intellectually devised images in favor of direct experience.

Shortly after the doctrine's introduction into Japan, its monks began the construction of gardens. The essential design elements included in these gardens came to be the main elements of what is known today as a traditional Japanese garden. Naturally the employment of these elements provided the monks with an opportunity to express the "way of Zen." In them Zen principles were translated into very special esthetics.

In describing these Zen concepts English is used where there is a commonly definable equivalency. Where the concept is unique to Japanese thought, the Japanese term is used alone. Among the concepts important to garden building are:

Asymmetry involving a preference for the imperfect over the perfect form and shape and a preference for odd rather than even numbers.

Simplicity which looks to the achievement of "nothingness" or *mu.*

Koko refers to aging accompanied by maturation and mellowness stressing the importance of aged quality and time.

Naturalness or *shizen* requires avoidance of the artificial or forced.

Yugen is the achievement of profundity with mystery, the use of darkness to create stillness and tranquility, and the utilization of the technique of *miegakure* or avoidance of full expression which requires the hiding of a part of the whole.

Wabi, sabi, and *shibui* translated as austerity, elegant simplicity, and tastefulness.

Seijaku or the attainment of stillness, quiet, and tranquility.

Japanese monks returning from China brought back Zen teachings and many art objects common in Sung China. The latter were products of Zen philosophy and were prized highly by art connoisseurs among the aristocrats, monks and warriors of the time. Most important, however, in influencing the development of gardens were the black monochrome landscape paintings called *suiboku sansuiga.*

In order to reach the essence of things, all nonessential elements must be eliminated. Color is avoided whenever possible. Black *sumi* ink is the one true color and in it one can see endless varieties of all colors. Translating this to a garden calls for the predominant utilization of monochromatic green. Flowers in natural colors should be used only to enhance the value of the monochromatic color.

Under Zen influence the dry garden became one of the dominant types of gardens and stone came to be most important as a part of garden design. What the *suiboku* painting had expressed with bold brush strokes was achieved by the proper placement of a few rocks and trimmed shrubs to symbolize the grandeur of mountains and nature compressed into a small cosmos. Void or negative space expressed by gravel covers the majority of the ground and is as important to the garden as is the stone arrangement. Irregular shaped, dark colored stones are selected to carry out the concepts of *yugen* and *shibui.*

The tea garden was created by Zen teamasters. Tea was introduced originally to Japan when Eisai, a Zen monk, returned from China about 1200 A.D. Later, during the fifteenth and sixteenth centuries, the art of the tea ceremony or another "way" of Zen Buddhism was developed. To emphasize Zen principles, a unique teahouse and tea garden was developed.

Zen elements were added to the tea garden when Sen-no-Rikyu (1522-1591) developed the "cottage" or *soan* style of tea ceremony. The tea garden was called *roji* which was supposed to bring to mind a forest path to a remote village or mountain. Naturalistic planting was preferred and artificially trimmed or colorful plants rejected. Since it was a pathway, stepping stones were a main feature of this garden. But in such gardens, smaller and unobtrusive stones were used for this purpose.

Ornaments common to these gardens such as water basins and special stone lanterns had a direct relation to the ceremony itself. Usually the objects used were old, weathered and covered with moss to reflect the Zen esthetics mentioned before. It is interesting to note that even though both the dry garden and the tea garden express Zen esthetics, the tea garden was designed to be walked in while the dry garden was to be viewed in contemplation.

In order to provide an atmosphere of otherworldliness and isolation for participants in the tea ceremony, the more formal tea gardens are composed of an outer garden, a middle garden, and an inner garden in which the teahouse is located. After slowly traversing these spaces and arriving at the teahouse, the participants are supposed to be in a mood of tranquility which will help them to concentrate on the meaning of the ceremony. For this reason utmost care must be taken in the design of the garden and architectural entities to achieve simplicity and naturalness, and to evoke the qualities of secluded quietness, stillness, and tranquility. In this sense, with the exception of the dry gardens belonging to Zen temples, the tea garden, compared to any other part of the Japanese garden is the best place to discover Zen influenced esthetics.

Design

In order to evoke the criteria of Zen esthetics mentioned before, the suggestive mode of expression became a main approach to garden design. Specifically, the designer must adhere to the concept of *miegakure* since Japanese believe that in expressing the whole the interest of the viewer is lost. The designer must motivate the viewer to achieve empathy with the garden and use suggestive means to arouse the viewer's imagination making possible the expansion of the garden beyond its physical bounds.

The teahouse or arbors in the garden are partially hidden behind trees or fences and beautiful garden accessories such as stone lanterns are set beside trees and shrubs in a manner to avoid total exposure. The main body of a rock is set deep in the ground. The human desire to expose every inch of a costly object is suppressed. Colorful objects are eliminated as building materials. Natural and subdued colors are praised. Symmetry in shapes or forms are avoided whenever possible. The shape and counter of the lake and the form are irregular. The grouping of stones and trees are odd in number.

An important concept in the garden is "simplicity" or *kanso.* In this concept, beauty is attained through omission and elimination. Simplicity must not be confused with plainness which is, in many cases, monotonous or a lack of refinement. Simplicity means the achievement of maximum effect with minimum means. Buildings, bridges, fences, and pavement all utilize natural material constructed in a most imaginative and refined manner.

The esthetic concept of naturalness or *shizen* prohibits the use of elaborate designs and overrefinement. The garden designer must conceal his creative innovations under the guise of nature. A close examination of many garden walks and pavement reveal the most intricate and creative patterns but they are rendered inconspicuous by the utilization of natural and subdued colors and textures. Meticulously trained and trimmed oversized *bonsai* style pines appear to be century old trees which have developed naturally in the garden.

The actual physiological phenomena conceived in the Zen esthetics of *wabi, sabi, shibui, koko, yugen,* and *seijaku* is the state of things seen by the eye of an ordinary person such as weathering or *fuka,* erosion or *shinshoku,* and wear or *mametsu.* However, such natural phenomena were regarded highly as esthetic values as a result of their impact on the Japanese intellectual-emotional response. For this reason the "element of time" became an important ingredient in the development of the garden.

Time allows Zen qualities to be present. *Koko* implies that things improve or mature with time. The Western concept of an "instant garden" is denied in Japan. With time and proper care the true beauty of the properly designed garden will manifest itself.

The seven criteria of Zen esthetics which have been introduced are not to be viewed separately because they co-exist one with another in all Zen-influenced Japanese gardens. The analysis of the dry garden and the tea garden show that, in spite of their differences in style and design, they both follow the criteria mentioned. The same can be said for the other fields of art which have been influenced by Zen such as painting, calligraphy, flower arrangement, tea ceremony, ceramics, and Noh drama.

—Koichi Kawana
University of California,
Los Angeles

Professor Kawana's address was delivered to the American Association of Botanical Gardens and Arboreta Conference, hosted by the Missouri Botanical Garden.

Member of
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Fund of Greater St. Louis

Gardening in St. Louis

June is the month of warmer weather and the time to consider adequate watering programs for the garden. The area now has a soil moisture index which is given periodically on local TV stations and is based from 0 to 2 above. Zero index means that the ground is extremely dry and should be watered with the equivalent of 2" of rain. As the index gets over 2, there is fairly adequate moisture in the soil. As it begins to drop, the home gardener needs to watch very carefully and be prepared to get the hose out and give a good watering.

This is the month that heavy mulching will reap good dividends; keeping the soil from compacting, keeping it cooler and also controlling weeds. The compost tends to control ground temperatures and releases the moisture more slowly, which is advantageous to the plants. Mulches should be renewed periodically as they tend to break down, and extra mulch should be applied at least once a year to keep up a certain level. As the mulch decomposes it releases nutrients into the soil, helping to feed the plants.

Water early in the day or late afternoon allowing plenty of time for the plants to dry before darkness sets in. Heavy watering can be done at any time of the day without hurting the plants. Watering the equivalent of 2" of rain at ten to twelve day intervals, is adequate and much preferred to daily watering.

Bare areas in flower borders can still have annuals set out or seeds planted.

WEED CONTROL

Weed control should be maintained by removing any of the weeds by hand or digging up if necessary and applying mulches to control the weeds themselves. Lawn areas infested with weeds can now be treated with herbicide, such as 2-4-D with silvex used according to the directions on the container. This should be applied when there is little or no wind, preferably early in the morning when the plants will absorb it. Spraying just to the point of misting leaves is all that is necessary. Spraying to the point of run-off can be detrimental to tree roots in the area. Avoid using any herbicides on plants and to check for insect damage. As soon as insect damage is observed insects should be brought under immediate control with the proper use of a good insecticide recommended for the specific insect.

Spider mite, which is a problem in hot, dry areas, particularly on roses and some evergreens, should be sprayed with Kelthane or another good miticide. Apply the spray underneath the leaves and then on top at three-or four-day intervals for at least four applications. Spraying is also necessary to control fungus and black spot on roses. Use Phaltan or Captan or Benlate, alternating between at least two of these at regular intervals as new growth is formed.

CHLORATIC CONDITIONS

Due to the severe conditions last year and this winter some plants are showing chlorotic conditions. This is a light green color and in many cases the veins are of a dark green color with the light green in between. This indicates a lack of nourishment. In some of the cases – such as hollies, azaleas and rhododendron – it can be corrected by using iron chelate at the rate of one tablespoon per gallon of water along with one tablespoon of Epsom salts. Apply at the rate of one gallon for every 6" to 8" of plant growth. Soil should be moist when this is applied to allow it to get down to the roots of the plants. In many cases the need for fertilizer is also a necessity if plants are not fed earlier. In some cases correct by additional application of a liquid fertilizer around the base of the plants. In using powder fertilizer it is best to follow with a good watering to keep it off the foliage and prevent any burning from splashing when it rains.

Spring flowering shrubs such as spireas, weigelias, forsythia and others, if not pruned, should be pruned immediately by removing some of the older canes and some heading back to control the shape and form of the bush. This should be done as early as possible as the buds will be produced on the current season's wood. Perennials that have finished flowering should have the top seed heads removed and a balanced fertilizer worked in around the plants. Super phosphate at the rate of five pounds per 100 square feet may also be advisable. Work this in immediately and follow with a good mulch to control weeds.

CUT FLOWERS

Cut flowers for the house early in the morning before the sun gets too strong. Place them in warm water, about 95°, in a cool area for a couple of hours before arranging them for table or mantel. A tablespoon of sugar for a quart of water will help to prolong the life of the flowers. Aspirins and pennies will shorten the life of many flowers.

Chrysanthemums can still be divided: lifting the clumps out of the ground and removing the single side stems, pinching back and watering-in well shading for a day or two until they become re-established. This will give ideal flowering in the fall.

Asparagus is getting past its growth period and cutting should be ending shortly. Beds should be fertilized with a balanced fertilizer and application of heavy mulch to control weed growth.

Lawns that have been making poor growth would benefit from normal application of a commercial fertilizer such as 6-12-12, applied when the grass is dry or just before a rain. Avoid using fertilizers high in nitrogen which stimulate leaf growth only.

VEGETABLE GARDENS

Vegetable gardens should be producing well now and should be given adequate watering. If necessary, side dressings of a balanced fertilizer, making rows 2" or 3" from the base of the plant about an inch deep, applying a light application of fertilizer in the row, covering with soil and watering well. Increase the mulching around vegetables to control the soil temperature and weed growth. Many of the warm vegetables such as tomatoes, beans and cucumbers can still be planted if space allows. Tomatoes should receive plenty of water and regular feeding of a liquid fertilizer to keep them growing well. Mulching under the plants with straw or hay will keep the fruit off the ground and help to prevent fruit rotting. Some thinning of vegetables that are planted too thick should be done to allow plenty of room for those remaining to develop properly. Watch for insects and use recommended sprays when needed. Follow instructions on the label carefully, and do not use after certain dates according to the instructions on the label. Do not use herbicides of any kind in the vegetable garden. These are poisonous.

If lawn areas under trees are doing poorly, additional feeding will be needed or grass removed and replaced by a good mulch or ground cover to avoid high maintenance.

Spring bulbs can now be cut back to ground level or dug up and stored in a dry area until thoroughly dried, cleaned and restored, with plenty of air circulation.

If crabgrass was not controlled earlier and is growing now, proper sprays should be applied as indicated earlier. If mowers have not been raised, you should do so immediately so you are cutting no closer than 2" – 2½" above the ground level.

— Robert J. Dingwall
Chief Horticulturist

GARDEN BOUQUET

"On behalf of Governor Duane Yadon and the Lions of District 26-A-1, the writer wishes to thank you, the other officials, and the staff of the Garden for the courtesies extended to Lions International Director Kaoru Murakami of Kyoto, Japan, his wife Shoko, and the rest of the tour party on the occasion of their visit to the Garden. The new Japanese Garden is beautiful, and will be a great asset, comparable to the Climatron.

"While walking around the Japanese Garden, Director Murakami paused, looked all around him, then said 'I have been in possibly one hundred Japanese Gardens outside Japan but they all lacked something. Here, today, for the first time I feel that I am in Japan'. On Sunday he addressed another Lion District's Convention in Jefferson City, told of his visit to the Garden, and said, 'If this Japanese Garden were to be transported to, and set down in, Japan, not one thing would have to be changed.' I am sure that these expressions will be repeated many times by Director Murakami as he travels throughout the world, not only as a Director of Lions International, but also as Director General of Urasenke, with its more than five million members, all people who are interested in preserving the cultural heritage of the old Japan.

Sincerely,
Thomas M. Langan, International Understanding & Co-operation Chairman, District 26 A-1, Lions International."

The Garden's Life Members were honored at a reception held recently in the Henry Shaw Parlor in the Administration Building. In attendance are, from left, Mrs. John S. Lehmann, William Pagenstecher and Howard Baer.

New Developments in Dutch Elm Disease Control

Dutch elm disease — which is widespread in the St. Louis area — is noticed in the early stages during the spring by flagging of the newer parts of the plant where growth is commencing. Drooping of the leaves, curling, shriveling and browning are all symptoms of Dutch elm disease. During mid-summer the signs of this disease are yellowing of the foliage and drooping.

Examine the lower trunk of your elm tree in the spring for red burrowing dust, a fine sawdust-like material caught in the bottoms of bark fissures. This dust indicates the presence of native elm bark beetles under the bark. The presence of the beetles does not necessarily mean your trees have Dutch elm disease but means that the are in imminent danger of infection in the next growing season.

Where the European elm bark beetle occurs, small twigs on the ground under the elms may indicate that these beetles have been feeding in large numbers and may have caused infection. When either of the above signs are present on your elms or those of your neighbors, the immediate thing to do is to call a qualified arborist and have him inspect your tree and if need be, carry out the necessary treatment for the control of the disease.

Dutch elm disease is caused by the fungus, *Ceratocystis ulmi.* Tiny spores of the fungus, are carried by elm bark beetles and are rapidly spread through the water conducting system of elm trees causing wilting and death. The disease is spread mainly by two beetles — the native elm bark beetle and the small European elm bark beetle. The disease can also be spread where trees are close together and roots are intermingled. It is spread through the root system of one plant into another. Prevention of the disease means to keep elms healthy, vigorous and properly pruned. Root feeding with a balanced fertilizer can do a great deal toward keeping the plants healthy along with a regular watering schedule during periods of drought.

One of the most promising chemicals tested to date is Lignasan BLP, DuPont Trademark. This is a water soluble derivative of a widely used Benlate fungicide. This should be applied by qualified arborists who will determine the amount of the material used for individual trees involved.

This is injected into the trees using a technique commonly referred to as pressure injection and is usually placed in a series of one-inch diameter holes spaced at 6-inch intervals around the base of the tree. Each hole is drilled through the bark to a depth necessary to reach the current years wood. The rubber gasket is placed in the hole; an injection head placed against the gasket and attached to the tree with nails. When a sufficient number of injection sites are established on the tree, all heads are connected to a common manifold by a series of hoses. The manifold is then attached to a tank containing fungicide. By application of a tank pressure of 50 pounds per-square-inch, the fungicide can easily be administerd to large trees, often within minutes.

Successful treatment depends largely on early detection of disease symptoms. In trees where more than 15% of the foliage is symptomatic, chances of curing Dutch elm disease are slight. Treatment can be applied from the time the leaf starts to break out until leaves have matured.

For further information on treatment, contact your local arborist in the metropolitan area.

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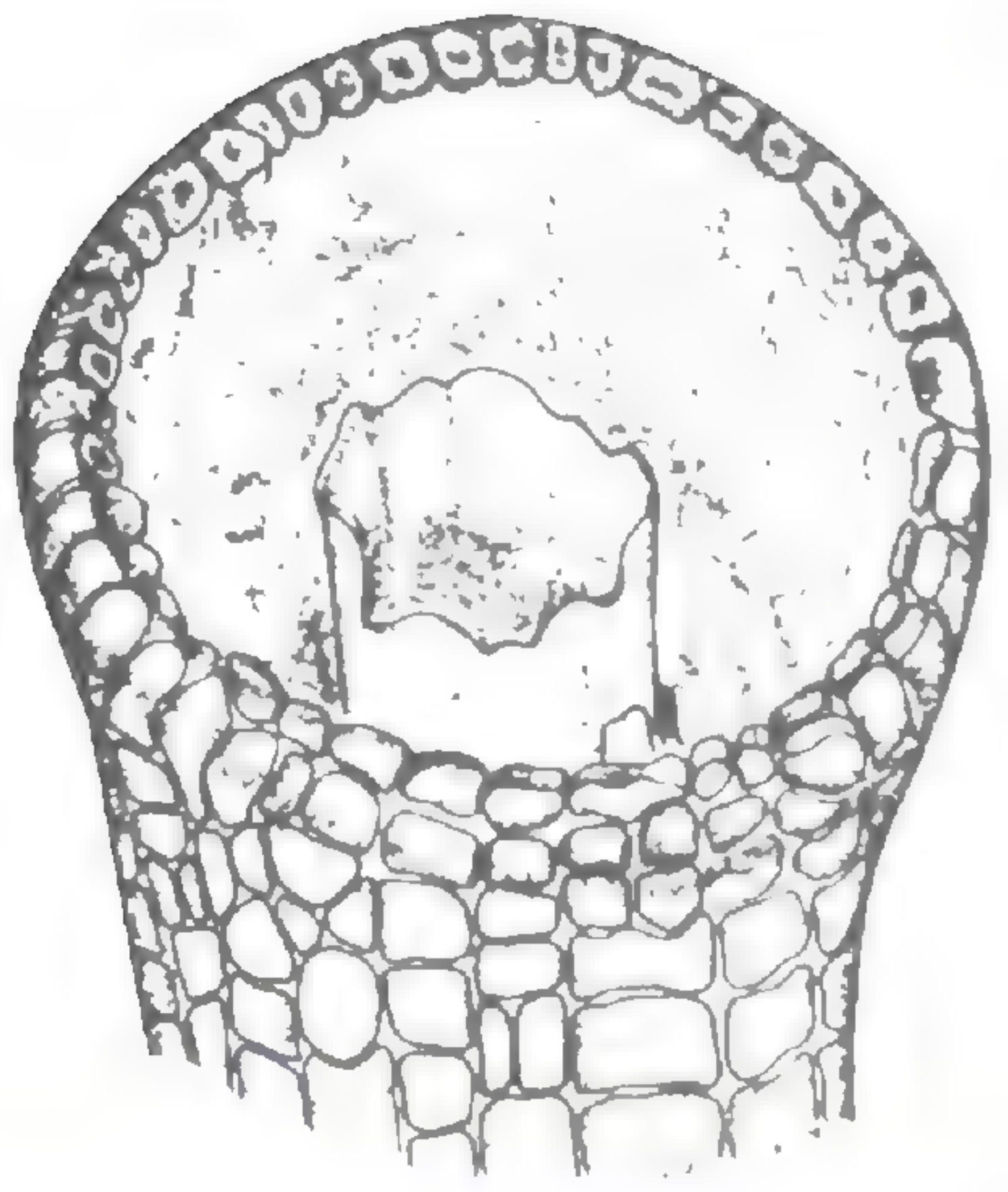

New Genus of Mosses Discovered

Dr. Marshall R. Crosby, chairman of the Garden's Botany Department, unpacks following a botanical field trip. On expedition to Chile, Dr. Crosby discovered a new genus of mosses, called Florschuetzia, characterized by the absence of peristone at the mouth of the capsule, see inset upper right.

During a recent plant collecting expedition to Chile, Dr. Marshall R. Crosby, chairman of the Garden's Botany Department, discovered a remarkable new genus of mosses, which he has named *Florschuetzia.*

The expedition, a joint Missouri Botanical Garden – Field Museum of Natural History effort sponsored by the National Geographic Society, was to explore southern Chile from the area of Concepción south to the island of Chiloe and compare the species found there with those known from farther south. While several new species have been discovered among the collections since returning to St. Louis, Dr. Crosby says that he knew within a few moments of its discovery that *Florschuetzia* was something exciting and probably previously unknown.

Florschuetzia was found at the end of a long collecting day in a small nature preserve. The preserve had been an island in the Río Pilmaiquen until some twenty years ago, when the river was diverted to produce hydroelectric power. The preserve is enjoyed by many people from the nearby town of Entre Lagos, and the trail bank on which *Florschuetzia* grows is passed by hundreds of visitors yearly.

The first plants which Dr. Crosby found lacked spore capsules, which are usually critical for the complete identification of mosses. The leafy plants which he examined with his hand lens resembled those of the family Calymperaceae, which was of interest because that family occurs mostly in tropical areas and was not found in Chile. However, further search revealed many capsules, and they showed that the moss's relationships were in a totally different family. This family is called Buxbaumiaceae and is considered a primitive one, based on the structure of its peristome, the part of the capsule which regulates spore dispersal. Three genera were known, and all had a similar peristome. The most striking feature of the new moss was that it had no peristome at all, although the general appearance of the plants indicated a close relationship to *Diphyscium,* the largest genus of Buxbaumiaceae.

Several frustrating weeks in Chile followed. The Institute de Botanica at the Universidad Austral in Valdivia had the critical reference book which would tell if the discovery was new. Dr. Crosby made Valdivia his headquarters while in Chile. But, the institute was closed while its staff was on vacation. A telegram was sent to St. Louis asking that references be consulted to determine if anything like the new find had been described. The reply was that several species of the related genus *Diphyscium* were known from South America. Published descriptions of these poorly known species were sent to Dr. Crosby, but they were not detailed enough to deter-

(Continued on Page 2)

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GENUS OF MOSSES *(Continued from Page 1)*

mine if the previously known species were the same as his collection. When he returned to St. Louis, Dr. Crosby studied specimens in the Garden's herbarium and those borrowed from other herbaria. After studying all the known species of *Diphyscium,* he concluded that his collection differed in three important ways from all of them: first, his plant had no peristome; second, its leaf blades were only one-cell-thick, while all species of *Diphyscium* had leaf blades two-or three-cells thick; and third, the spore capsule differed significantly in its shape from that of any species of *Diphyscium.* Thus, the plant was described as a new genus, *Florschuetzia,* in honor of Peter A. Florschuetz, a Dutch botanist who made important contributions to what we know about South American mosses. The only species of the genus is *Florschuetzia pilmaiquen,* after the river near which the plants grow.

This discovery touches on several aspects of the research in which the Botany Department is engaged. First, many of the projects are cooperative efforts between the Garden and institutions here and abroad. In this case, Dr. Crosby was working with a colleague from Chicago; they depended on the cooperation of the Chileans for transportation, facilities, and access to collecting areas; botanists at herbaria in the United States, Europe, Canada and Japan provided specimens, literature, and expertise during the study of *Florschuetzia.* Second, the research is largely grant supported. The National Science Foundation provides most of the funding, but the National Geographic Society and other organizations provide significant help. Third, much of the initial work is done far away from St. Louis. Fourth, the Garden's herbarium and library collections provide a ready source of information about the plants being studied and act as repositories for staff collections and publications. Finally, the researchers in the Department receive a tremendous amount of support from the technical, volunteer and secretarial staff. Without their help, research work would be almost impossible.

Garden Gate Shop Has Gifts Galore

Patio glasses, trays, ice buckets, planters and plant stands to enhance any porch or patio – these are the colorful items currently being featured as summer stars at the Garden Gate Shop.

With summer weddings on everyone's calendar, the shop also offers a wide range of gift items, including candlesticks, trivets, plates, cups and saucers, plastic and cotton placemats and napkins.

Garden Members are invited to visit the Garden Gate Shop and take advantage of the wide variety of summertime gifts at discount prices.

QUEEN
OF
THE SHOW

This delicate rose, a Toro entered by Mrs. Earl Schillinger of St. Louis, was awarded a first prize during the annual show of the Rose Society of Greater St. Louis.

Symphony to Perform in Garden Setting

The St. Louis Symphony Orchestra, under the baton of Assistant Conductor Gerhardt Zimmermann, will present a summer concert at the Garden Saturday evening, July 9, at 7:30 p.m.

The program will consist of the works of Brahms, Wagner, Dvorak and Waldtenfel.

Tickets will be on sale at the Garden's Main Gate on the evening of the performance, beginning at 6:30 p.m. Admission will be $2.50 for adults, including Garden members, and $1.50 for children.

The performance will take place on a portable stage erected south of the Desert House. The concert is funded in part by a grant from the Missouri Arts Council.

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The Role of the Landscape Architect in Botanical Garden Development

John Simonds

The following is the text of an address delivered before the American Association of Botanical Gardens and Arboreta by John Simonds, senior partner of Environmental Planning and Design, Pittsburgh, whose firm developed the master plan for the Missouri Botanical Garden. The accompanying map of the master plan shows the Garden in detail. Dr. Taylor, mentioned in the first sentence, is president of AABGA, which held its recent annual meeting in St. Louis, with the Garden as host.

Dr. Taylor, distinguished members and guests of the American Association of Botanical Gardens and Arboreta, I too am proud and pleased to be here today, but I must tell you, you have the wrong man. The person who should be talking with you today about the design and planning of botanical gardens and arboreta is, in my opinion, my partner and member of your Association, Geoffrey Rausch. In my admittedly biased view, Geoff is one of the nation's foremost designers of such installations, having served, and presently serving, as consulting planner/designer of the Missouri Botanical Garden here in St. Louis,of the new Chicago Botanic Garden, Cleveland's Holden Arboretum, and the emerging Cary Arboretum in up-State New York. Geoff, would you stand for a moment, please?

Geoff and I share a keen interest in botanical gardens and a belief in their increasingly important role in helping to shape a better living environment. Between us we figure that so far we have visited and studied over forty of the major examples around the world. Each has its lessons, each has its merits, but we believe that as an urban research and teaching center or horticulture, there are few to compare with this garden in St. Louis.

Dr. Raven has described for you in glowing terms the evolving plan of the Missouri Botanical Garden and I must say that he is persuasive; but could it possibly be that in his enthusiasm as Director he has allowed himself to get carried away? I should like to take the time allotted me to apply to his garden, our garden — the garden of many, many contributors — some critical tests to see how it all checks out.

Does the garden express a compelling goal?

It is a law of human endeavor, and marksmanship, that one seldom scores better than one aims. In considering the planning, or replanning, of a fine botanical garden — elevate your sights. Aim high!

It has been told that once in a medieval courtyard three carpenters, working amidst their shavings and chips, were asked, what they were doing. One said, "Can't you see! I'm sawing a plank." Another, "I'm assembling a door." The third replied,"I am helping to build a cathedral." Which carpenter would do the best job? I think we might all agree.

As a corollary, in considering the planning of a new garden a Board chairman might propose, "There seems to be sufficient local interest to warrant giving it a try." How different if the chairman were to proclaim, "The members of our Board are all aware of the many telling contributions that a fine botanical garden (or arboretum) can make to a community. We are convinced of the need for such an installation here. It will do much to enrich the lives of our citizens and add a whole new and attractive dimension to our regional landscape. We therefore propose to begin at once to search for the most suitable site, to prepare the best possible long range plan, to raise the necessary funds, and to construct the garden stage by stage as conditions will permit. We will contrive each component as best we are able, and all components together within a beautiful park-like setting. The people of the surrounding areas will come to enjoy the garden as it takes form — and we will all learn together!"

Set your goals high! Let them shine out through all the work to follow.

Do the garden plans stem from a comprehensive program?

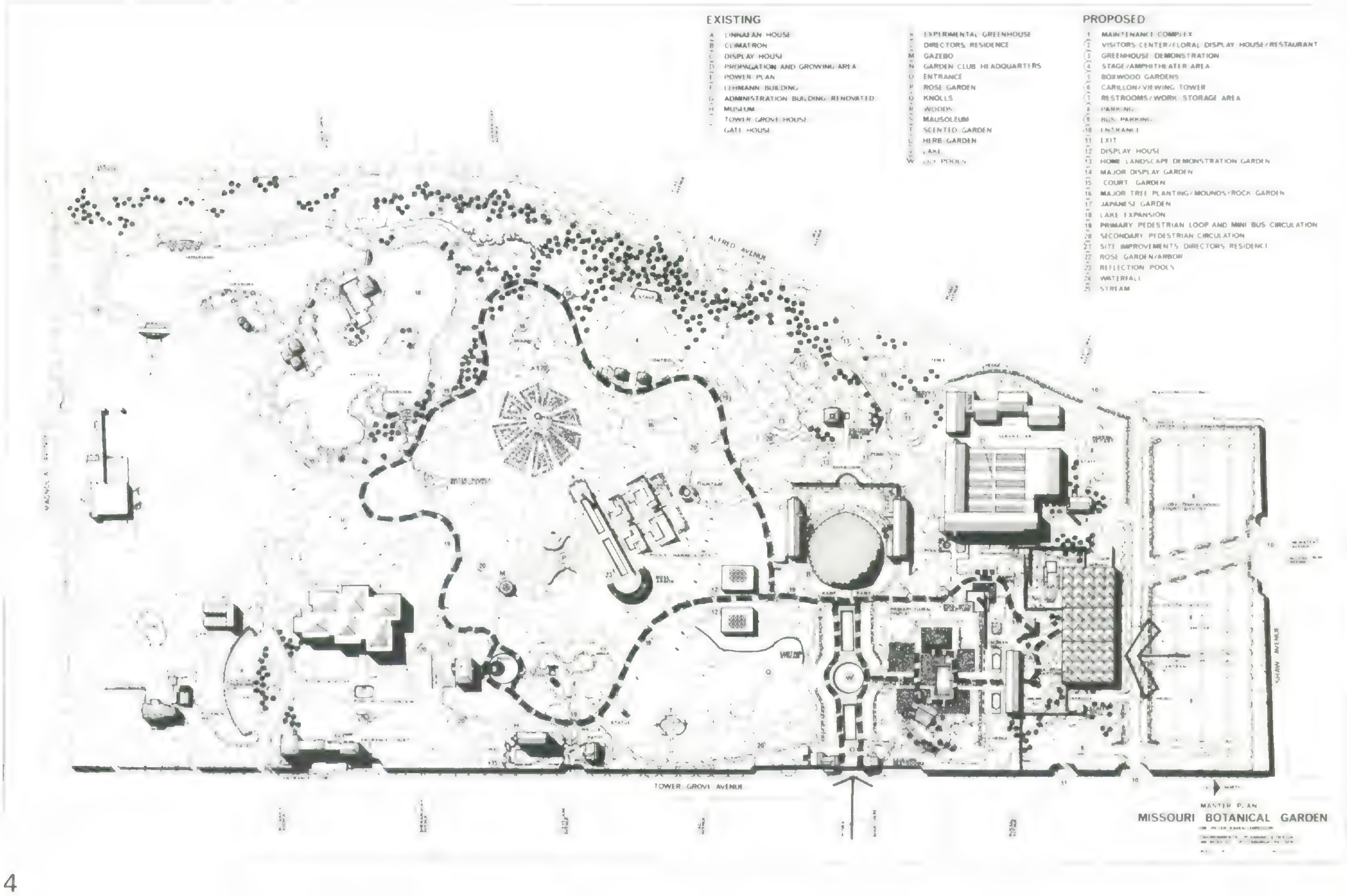
They must. And *comprehensive* is the key word. At the time the new program is being formulated everyone concerned with the garden and its use should be brought into the discussions. The Board for policy guidelines, the permanent staff, the special interest groups and societies, the maintenance workers, and volunteers. This is a time to talk it all out together — to let the ideas flow and congeal. A sound program will include all the elements. It will list and describe each building, function, and the required floor area. It will note the desired land use areas and their preferred relationships. It will consider the points of access, the routes of vehicular movement, the size and location of parking and service compounds, the paths of pedestrian movement and interconnection. Visitor days and hours will be discussed as will be the program emphasis, the type and extent of the plant collections, displays and supporting facilities. Every facet and phase of operation will be in turn reviewed and specific requirements detailed and listed in a balanced working program. This is not only helpful; it is *essential.* For the garden, in sum, can be no better than the elements of which it is comprised.

Does the garden build upon the past?

The St. Louis Botanical Garden has a distinguished heritage. When Henry Shaw first opened the gates in 1859 the visitors came upon features that one can still enjoy today. Yesterday, more than a century later, I walked beneath trees that Henry Shaw must have planted — a towering sycamore, a glorious beech, and magnificent oaks and buckeyes. Many of you will agree from experience that to deny the history of such a garden, or to change its orientation abruptly, is to lose much of value and generate difficulties. A garden which builds upon its tradition will provide many economies, bring along friends, and extend the momentum to carry it into the future. For only when a garden has roots in the past can it come to full flowering in the present and yield its best fruit in the years ahead. A primary requisite of any Planning Committee or Board is a sense of History.

Does the garden express the character of the region?

It should. Each regional landscape is unique. The most agreeable homes, communities and gardens of the world are those that borrow their nature and power from the regional topography, construction materials, vegetation, color, and character. Examples


EXISTING
A LINNAEAN HOUSE
B CLIMATRON
C DISPLAY HOUSE
D PROPAGATION AND GROWING AREA
E POWER PLAN
F LEHMANN BUILDING
G ADMINISTRATION BUILDING RENOVATED
H MUSEUM
I TOWER GROVE HOUSE
J GATE HOUSE
K EXPERIMENTAL GREENHOUSE
L DIRECTORS RESIDENCE
M GAZEBO
N GARDEN CLUB HEADQUARTERS
O ENTRANCE
P ROSE GARDEN
Q KNOLLS
R WOODS
S MAUSOLEUM
T SCENTED GARDEN
U HERB GARDEN
V LAKE
W LILY POOLS
PROPOSED
1 MAINTENANCE COMPLEX
2 VISITORS CENTER/FLORAL DISPLAY HOUSE/RESTAURANT
3 GREENHOUSE DEMONSTRATION
4 STAGE/AMPHITHEATER AREA
5 BOXWOOD GARDENS
6 CARILLON/VIEWING TOWER
7 RESTROOMS/WORK STORAGE AREA
8 PARKING
9 BUS PARKING
10 ENTRANCE
11 EXIT
12 DISPLAY HOUSE
13 HOME LANDSCAPE DEMONSTRATION GARDEN
14 MAJOR DISPLAY GARDEN
15 COURT GARDEN
16 MAJOR TREE PLANTING/MOUNDS/ROCK GARDEN
17 JAPANESE GARDEN
18 LAKE EXPANSION
19 PRIMARY PEDESTRIAN LOOP AND MINI BUS CIRCULATION
20 SECONDARY PEDESTRIAN CIRCULATION
21 SITE IMPROVEMENTS DIRECTORS RESIDENCE
22 ROSE GARDEN/ARBOR
23 REFLECTION POOLS
24 WATERFALL
25 STREAM
ALFRED AVENUE
TOWER GROVE AVENUE
SHAW AVENUE
MASTER PLAN
MISSOURI BOTANICAL GARDEN

include:

A New England farmstead fitted to stream and woodlot,

A sprawling prairie town, with its strong horizontal and vertical lines,

A San Francisco hillside home braced and terraced against the view,

A Florida patio garden with enclosing walls, lush sub-tropical foliage and shaded pool. . .

Each is expressive of its locale. Each borrows quality from its site and returns this quality many fold.

The St. Louis region is rich in mellow gray limestone. It is blessed with luxuriant vegetation, abundant water and undulating ground forms. In the revised garden plans we have persuaded the ground forms to undulate more and have shaped them to enframe a new system of lakes and waterways. Look to this garden in both its former and current design to discover those ways in which it expresses its place in its native Missouri region. The more, the better.

Does the plan respond to the site?

A farmer laying out buildings, fields and orchards will analyze his land with great care. He will test the soil, observe the sweep of the sun, the force and direction of wind, the play of the breeze, and note the drainage patterns. He will fit and adjust each element of his farmstead to achieve the optimum relationships. So must it be with a garden.

I recall that we had been working for two years on the plans for Chicago's Botanic Garden when Dr. Francis deVos first came to take charge and called for a year's moratorium "to get the feel of the land." It was time well spent. The revised plans were better. The original studies had grown out of a leaning toward display. The new plans were to place emphasis on the best possible siting of the collections, the strategic grouping of research and maintenance facilities and the creation of an island teaching center and related demonstration gardens. In particular the new plans were marked by a sensitivity to the limitations and possibilities of the project site.

In St. Louis, too, our first efforts with Dr. Raven and his staff were to develop an empathy for the site, in order that any negative aspects might be ameliorated and that the full site potential might be realized in our joint planning.

Does the garden have a controlling theme?

After a program has been thoughtfully prepared and the site explored and analyzed, there comes the time to step and ask, "What should this garden be?" Often, in a few sentences, it is possible to state a design concept so simply and clearly that it will govern all aspects and details of the developing plan.

In Chicago, for instance, confronted with a depleted farm, highway borrow pits and a polluted stream, the planning team agreed, "We will create here a whole new landscape of streams, lagoons and rolling hills as the garden setting. The excavated material shall be shaped into a sculptured central island surrounded by smaller islands and embracing land forms to provide windscreen and visual protection. The roads and public parking "rooms" will be fitted into the bordering land areas, and all garden elements linked by meandering pedestrian paths and a scenic mini-bus route."

In St. Louis it was decided to protect and preserve the integrity of the established research and educational complex, and to honor the Climatron theme piece and the historic buildings. A new vehicular approach and commodius motor court would be designed, together with a visitors' center. At the far property corner, as a cool and refreshing summer attraction, a lake would be developed as the site of a Japanese garden. Visitors would be directed along a broad pathway loop around which, and beside which, new collections and garden areas would be installed in progressive stages.

New York's Cary Arboretum is taking form on a magnificent forested mountainside overlooking a valley stream. Here, meadows are being "let into" the wooded upland slopes, fields opened up above the marsh, and bridges built across the watercourse – all to accommodate the functions and interconnections required of a dynamic research and teaching institution. Each use area is planned for optimum function and inter-relationship with other areas. Circulation drives and paths are so arranged as to provide efficient linkage while discovering and revealing the best views and topographical features.

The Holden Arboretum, to the east of Cleveland, is well established on a superbly beautiful site of rolling farmland, ravine and forest. Here the task of the Board, Director, and planning team was that of redefining goals, consolidation and implementation. A new system of circulation ways provided the opportunity to both unify and inter-relate the research, demonstration and conservation-nature study sectors.

Is the plan of the garden soundly contrived?

Does it have a logical diagram? Does it have a well-balanced structural framework to which all present and future components may be related? One glance at the lines of a well-designed sloop is enough to tell the experienced sailor how she will handle. So it is with the basic plan layout of a fine botanical garden. If well conceived, the relationship of the major land uses, structures and circulation ways can be described in a few clean and eloquent lines.

A sound plan translates all aspects of the program into *land use areas* of the proper size and shape and arranges these into the most compatible groupings. These are in turn so arranged over the topographic survey as to take fullest advantage of the landscape features. All plan areas are then linked with lines of vehicular and pedestrian movement devised so as to "run with the land." Only when all the elements have been brought into optimum position has the plan solution "arrived."

Have the plan areas been developed as spaces?

All landscape planning of excellence is ultimately involved with the creation of out of door *spaces.* Each is so designed so as to accommodate and express its particular use. A parking compound, for example, should be designed, in three dimensions, to function as a workable and attractive parking *space.* A service *area,* without enclosure, exposes to view a disarray of materials, tools, and equipment and detracts from adjacent garden areas. Designed as a functional working *space* the same area – paved, enclosed by grated walls, provided with well-placed equipment stalls, tool racks and storage bins, and furnished with hydrants, lighting, a vine, and a tree or two – becomes a pleasant, and efficient, working environment.

Each area of the garden is to be considered in terms of its optimum use and volumetric enclosure – by walls, mounding, hedges or loose foliage. It can be categorically stated that the single most common failing of unappealing landscape areas is a lack of studied spatial enframement.

Is the garden conceived in terms of systems?

Does it clearly describe discernible *systems* of use, operation and servicing? Is there a *system* of drainage, of irrigation, of signing, of lighting, and a unified family of site furnishings with such standardized and interchangeable parts as bench slats, sign blanks, screw anchors, lock washers and lamp globes? Such coordination can reduce warehouse inventories – and maintenance costs – by half.

Does the plan provide a sequence of compact garden nodes of high use intensity surrounded by parklike open space that is easy to maintain? Are all materials of high quality and adapted to modular construction? Competent planning reduces installation costs and maintenance budgets.

Will the garden plan accommodate change?

Planning is not to be considered the production of an elaborate master plan that will remain unchanged and inflexible for all time. Such a plan can only be static, and like a static plant, is dead. Planning, at best, is a dynamic, evolving *process* by which changing needs, requirements and opportunities are kept in balance through continuing review and consultation. To retain its vitality the *General Plan* (of development) must be up-dated periodically.

Ideally, the General Plan is contrived as a *guideline* for orderly growth. It determines the basic organization of land use relationships, assigns projected area needs and capacities, indicates the major routes of movement and interconnection, establishes the most efficient utility and service diagrams and sets the spatial framework. It locates in schematic form a *place* for all foreseeable garden components, yet carries into detail only those to be constructed soon. While the size and nature of all future elements are suggested, the plan should permit and encourage innovation and creativity in the design of each new structure or garden area all within the spirit of the guiding General Plan.

It has been well said that the only thing certain is *change.* Needs, requirements and opportunities change with the times. Each new Director, Board member and dedicated staff worker will bring to the garden fresh thinking, new approaches, and added thrust. These can be accommodated by – and contributed to – a well conceived General Plan.

Does the garden express its purpose?

When architect Louis Sullivan proclaimed, "Form follows function!" he was asserting a profound conviction. It was like stating the philosophical premise that, "God is love." Once you have said it, you have said it all. What Sullivan, a consummate designer was proposing was that a well-designed knife, for example, should look, feel, and cut like a knife – like the best possible knife that the user could imagine. A sailboat should be shaped and rigged like the best imaginable wind-driven craft. A home should be planned as the best conceivable dwelling for a given family at a given time and place. In like manner, a botanical garden or arboretum should be planned from the start to express and fulfill to the utmost its many various functions.

How can the plans be tested?

The ultimate test of a superior botanical garden – or any other work of landscape architecture – is the supreme test of human experience. As each garden segment is constructed it can of course then be tested on the basis of actual performance. But even in the planning stage much can be learned by spreading out the developing master plan and tracing through it in one's imagination the experience of the users. One might say, for instance,

"I am the Director. As I enjoy breakfast on the terrace of my secluded home I am eager to take my daily walk through the garden to note the condition of each area and the changes that each new day of the season brings. Today, this is the path I will take, and this is what I will see. . .

I am a teacher bringing a group of students on tour. As we arrive at the broad approach to the Climatron the children view its dome across the pools and fountain. They have heard about the tropical plants and displays inside this great glass structure and hurry along to see them.

I am a retired businessman. My wife and I drive in each week to enjoy long hours in quiet exploration. Today, we are bringing visiting friends. As we turn off the freeway and enter the parking compound we are welcomed at the handsome new visitors center for orientation and then move out through the historic Linnaean House to view the annual and perennial floral displays on the way to the Japanese Garden.

I am in charge of the research program and I take pride in these quarters within an extensive horticultural laboratory, yet out of the stream of traffic. . .

I am the horticulturalist. . .
I am an unsighted child. . .
I am the superintendent of maintenance. . .
I am a volunteer worker. . .
I am the postman. . .
the refuse collector. . .
the driver of the tour bus. . ."

If for any of these visitors as we trace their way, through the plans, on their daily rounds we experience for them points of possible confusion, annoyance, or incongruity — the plans require further study.

If for *all* who will visit, use, or service the installation the experiences will be those of convenience, comfort, reward and delight — if everything is working well together — then the plans are sound and good — and the gardens will be *beautiful.* For beauty, by definition, is neither more, nor less, than "the perceived harmonious relationship of all the elements."

Dr. Raven — as scientists, citizens and hundreds of thousands of visitors work in and move through your garden each year — may each find here an experience of pleasure, instruction and beauty. May this beauty, magnified, become part of their lives — a powerful force for good in the city, region and nation. This, in its simplest, fullest sense, has been the goal of the garden planning.

John Simonds

John O. Simonds is Past President of the American Society of Landscape Architects. His firm, EPD, The Environmental Planning and Design Partnership of Pittsburgh and Miami Lakes, Florida, is engaged in a wide range of landscape architectural and community planning projects in this country and abroad.

He is author of "Landscape Architecture," and "The Freeway In The City," two books that have had a profound effect upon the American landscape. McGraw-Hill is soon to publish his latest work, "Earthscape," a manual of environmental planning and design.

* * *

David Goudy Named Director of Public Services

David Goudy at entrance to Japanese Garden.

David Goudy, a member of the Garden staff since 1970, has been named to the new position of director of public services, it was announced by Dr. Peter H. Raven, director.

Since 1971, Mr. Goudy has served as superintendent of the Shaw Arboretum, the Garden's four-square-mile wildlife and nature preserve at Gray Summit, Missouri.

In his new position, he will be responsible for the Garden's departments and operations which serve the public, including the Arboretum, the Ecological Services and Education Departments, the Flower Wagon, Main Gate operations, Public Relations and Publications, and sales, including the Garden Gate Shop and Horticultural Services.

Mr. Goudy, who graduated from Washington University in 1969, resides with his wife, Tracy, and son on the Arboretum grounds.

Shaw Birthday Set For Sunday, July 24

Henry Shaw's Birthday Party, staged by the Tower Grove House Auxiliary, will begin at noon on Sunday, July 24, in the area of the Garden marked by a huge balloon.

Famous' dishpan cookies will be served with punch and at 2:30 p.m., a cake baked in the shape of Tower Grove House will be cut. Prizes will be awarded throughout the day and there will be balloons for the children, live entertainment and music.

Garden Members are invited to visit the Garden and celebrate the birthday of its founder.

Thousands Join in Celebration of Japa

Sakura dancers, in traditional Japanese costume, perform for a crowd of Garden visitors during the four-day celebration marking the opening of the new Japanese Garden.

For four colorful days in May, the Missouri Botanical Garden was the center of the most intensive public attention in its history, as thousands of visitors took part in the celebrations surrounding the official dedication of *Seiwa-En*, the new Japanese Garden.

Guests and dignitaries from as far away as Japan were on hand to participate in the four-day celebration, along with distinguished visitors and public officials from the bi-state area.

On Sunday, May 8, the final day of the Japanese Garden celebration, nearly 15,000 visitors came through the Garden's Main Gate for a Japanese Festival – the largest crowd in the Garden's 118-year history.

Festivities began earlier in the week, however, with the issuance of "Japanese Garden Week" proclamations by St. Louis Mayor James F. Conway and St. Louis County Supervisor Gene McNary. The city proclamation was announced during the raising of a symbolic "carp" banner at City Hall. The ceremony was attended by Mrs. Conway and a delegation from Suwa, St. Louis' sister city in Japan.

Honored guests at formal dedication ceremonies on May 5 included His Excellency Fumihiko Togo, Ambassador of Japan to the United States; Mrs. Togo; Japanese Consul General and Mrs. Kiyoshi Sumiya from Chicago; Mayor and Mrs. Setsuji Iwamoto from Suwa, Japan; Toshitane Hirabayashi from the Nagano Prefecture, Missouri's sister-state in Japan; Taro Ishibashi, aide to Ambassador Togo; and others.

Paul Simon, St. Louis aldermanic president representing Mayor Conway, addressed a large crowd at the dedication ceremonies and hailed the new garden as "the crowning achievement" of the recent renewal of the Garden's "vitality and exuberance."

The revival of the Spirit of St. Louis, he said, "has never been better expressed than it's being expressed today in the dedication of this Japanese Garden."

Following the dedication ceremonies, a dinner for nearly 250 guests and dignitaries was held at the University Club. In the Japanese tradition, gifts were presented to special guests, while all in attendance were given sake-cup favors, made of cypress wood from Suwa and inscribed in Japanese, "in commemoration of the Dedication of the Japanese Garden, May 5, 1977."

On Friday, May 6, a Members Day was held at the Garden, highlighted by the presentation of a series of historic calligraphy screens to the Garden by Miss Sakicho Kacho, the great-granddaughter of Prince Sadanaru Fushimi, a Japanese nobelman who visited the Japanese Imperial Garden at the 1904 St. Louis World's Fair.

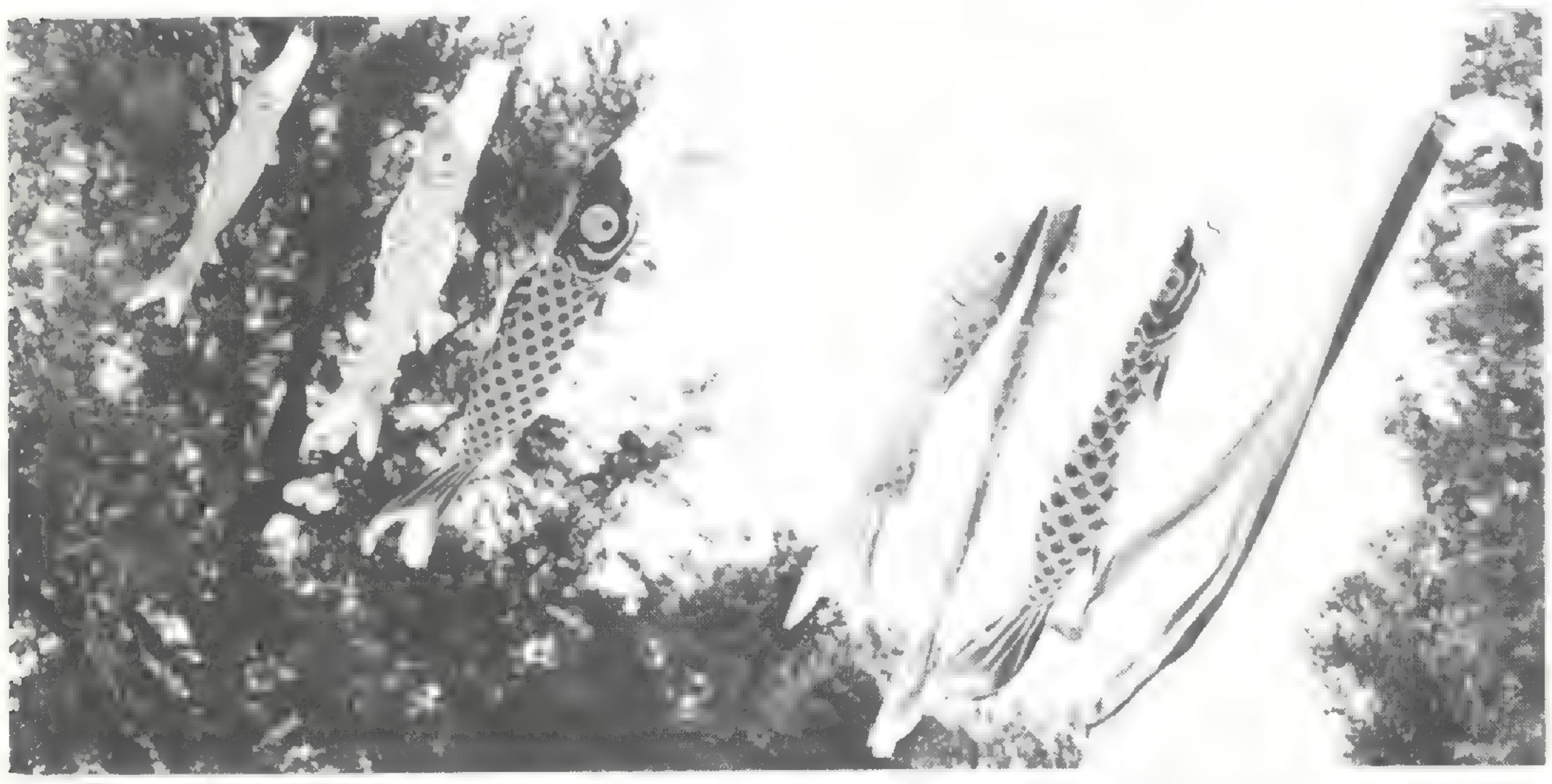
A traditional Japanese tea ceremony was also performed during the Members Day program.

On Saturday, a special Children's Day festival was held at the Garden, featuring exhibits and performances of Japanese arts and crafts, and workshops for children of all ages. In Japan, Children's Day is a national holiday.

On Sunday, the final day of the celebration, visitors to the Japanese Festival were greeted by silk-screened banners, flying Japanese carp flags and six foot paper ornaments of flower petals, chains and tiny birds. The Garden had been transformed, in fact, into a Japanese paradise in honor of the new Japanese Garden.

se Garden Opening

Kansuma Kai Dancers, in oriental headdress, take part in formal dedication ceremonies for the new 13.5 acre Garden.



Carp banners, a traditional Japanese symbol, wave over the Garden's Shoenberg Fountain during Japanese Festival Day, May 8.

Ceremonies proclaiming "Japanese Garden Week" in St. Louis included the raising of carp banners at City Hall, attended by visitors from Japan.

St. Louis County Supervisor Gene McNary, right, signs official document proclaiming "Japanese Garden Week" in St. Louis County. At left is Dr. Peter H. Raven, Garden Director.

Strolling from the Yatsuhashi (zig-zag) Bridge, a young couple begins a tour of the new Garden.

Japanese Garden Opening. . .

Toshitane Hirabayashi, from the Nagano Prefecture, Missouri's sister-state in Japan, takes part in the Shinto dedication rite for Seiwa-En. The teahouse was built by Mr. Hirabayashi's construction firm.

Dr. Peter H. Raven, Garden director, escorts His Excellency Fumihiko Togo, Ambassador of Japan to the United States, and Mrs. Togo through the Teahouse gate on Nakajima (Middle) Island. Ambassador and Mrs. Togo were honored guests at the dedication and a dinner afterwards at the University Club.

Colorful dramatic, foot-thumping exhibitions by the Taiko Drummers of San Francisco highlighted the entertainment during Japanese Garden weekend.

Dr. Raven Elected Fellow of American Academy of Arts and Sciences

Dr. Peter H. Raven, Garden director, has been elected a fellow of the American Academy of Arts and Sciences, a national honorary society founded in 1780 by John Adams and other intellectual leaders of the day.

Dr. Raven was among 108 leading scholars, scientists, public figures and writers elected to fellowship during the Academy's 197th annual meeting in Boston this month.

With offices in Boston, an active center on the West Coast and a developing Midwestern organization, the Academy carries on a program of study and publication on major national and international problems, requiring expertise in a wide range of disciplines. Academy membership currently includes 2,300 representatives from the mathematical, physical and biological sciences, as well as law, administration, public affairs, theology, fine arts and the humanities.

Dr. Raven, besides serving as Garden director, is Engelmann Professor of Botany at Washington University and Adjunct Professor of Biology at St. Louis University and the University of Missouri-St. Louis. He is a member of the National Academy of Sciences and is president-elect of the Society for the Study of Evolution.

The Society for the Study of Evolution, with some 2,000 members worldwide, publishes the international journal *Evolution*. It is the chief international society for the study of the evolution of plants, animals and microorganisms.

Mrs. Dwight Coultas Honored at Luncheon

Mrs. Dwight W. Coultas, retiring president of the Executive Board of the Members of the Garden, was honored during the recent annual luncheon meeting of the Members organization in recognition of her dedication to the Garden and her three years' service as president.

Dr. Peter H. Raven, Garden director, presented Mrs. Coultas with an engraved silver tray on behalf of the Garden Board of Trustees. From the Members Executive Board, Mrs. Coultas received a silver-and-gold charm depicting the Garden's distinctive logotype.

Other retiring members of the executive board, who have contributed greatly to the success of Members organization activities, include Mrs. Sudie Baker, Mrs. Philip Dodge, Mrs. Charles Freeman, Mrs. George Hasegawa, Mrs. Boardman Jones, Mrs. William Klein, Mrs. Eugene Pettus, Jr., and Mrs. Peter H. Raven.

The board's new officers include Mrs. Walter G. Stern, who returns as board president after a previous term from 1969 to 1972; Mrs. J. Butler Bushyhead, first vice president; Mrs. Robert Kittner, second vice president; Mrs. C.F.P. Stueck, secretary; and Mrs. Shadrach F. Morris, treasurer.

New Executive Board Members include Mrs. Theodore P. Desloge, Mrs. Frederick A. Hermann, Jr., Mrs. Charles G. Houghton, Jr., Mrs. O. Alexander Kerckhoff, Jr., Mrs. Robert E. Kresko, Mrs. Willard L. Levy, Mrs. John S. Lionberger, Jr., Mrs. Howard M. Love, Mrs. Carl B. Merollis, Mrs. Charles W. Oertli, Mrs. Eugene M. Reese and Mrs. Don L. Wolfsberger.

Mrs. Dwight Coultas, right, retiring president of the Executive Board of the Members of the Garden, receives an engraved silver tray from Dr. Peter H. Raven, Garden Director. The tray was presented in the name of the Board of Trustees, in recognition of Mrs. Coultas' three years of service to the Members organization.

Educational Papers Presented

Project Managers of the Environmental Education Training Project, a cooperative program between the St. Louis Public Schools and the Garden, recently presented papers at two professional meetings.

Calla Smorodin (Ecological Services) and Peggy Rustige (St. Louis Public Schools) presented a paper entitled, *Classrooms and Community: A Model for Inservice Training of Urban Teachers in Environmental Education*, at the annual meeting of the National Association for Environmental Education, April 24-26 in Boulder, Colorado.

Later they made a presentation at the annual meeting of the Missouri Academy of Science, which was held jointly with the Illinois Academy of Science at the University of Missouri-St. Louis.

The Environmental Education Training Project is supported by a federal grant from the Office of Environmental Education to the St. Louis Public Schools. The project co-directors have been Edward P. Ortleb, Science Supervisor, St. Louis Public Schools; and Dr. William M. Klein, the Garden's Assistant Director.

Garden-Gallery Program Offered

Garden lovers have been invited to take part in a Japanese art and culture presentation, co-sponsored by the Garden's Education Department and the St. Louis Art Museum, scheduled to begin at 10 a.m. Saturday, July 9. The program will begin with a slide presentation in the John S. Lehmann Building and will include a tour of the Japanese Garden, a workshop in which participants will build a mini-rock garden and a visit to the Art Museum. Participants are expected to provide their own transportation. There is no fee for Garden Members. Reservations can be made by calling the Education Department at 772-7600.

Henry M. Grich Named Trustee

Henry M. Grich

Henry M. Grich, acting president of the St. Louis Board of Education and director of Construction Documents Services for Bank Building Corp., has been named an ex-officio member of the Missouri Botanical Garden Board of Trustees.

A native St. Louis, Mr. Grich has been employed by Bank Building Corporation for the past 16 years and has 24 years' experience in architecture, drafting and related fields. He has been active in parent groups and is past president of the Roosevelt District Parent Congress.

Currently, Mr. Grich serves on a task force which studies special problems for the St. Louis School superintendent.

Mr. Grich has been active in the Boy Scouts program, having served as assistant cubmaster and assistant scoutmaster. Mr. Grich is married and is the father of eight children.

May 22 was Super Sunday at the Garden Shop, where a sidewalk sale featuring half-priced items attracted a large crowd to the Garden.

GARDENING IN JULY

The new 1978 rose catalogs are now beginning to arrive in earnest, and it is rather interesting to see some of the newer varieties that are available. Two new award winners for 1978 are Charisma, a floribunda, flame red with golden yellow buds; and Color Magic, a hybrid tea, creamy apricot with pink buds that shade from ivory pink centers to deep rose red on the petal edges. Both of these roses may be observed in bloom now in the Rose Garden located in front of the Camellia House. These two roses will not be available from growers until the Spring of 1978, but are two that have grown very well here in the test garden for two years and in the Rose Garden this year.

Along with these can be seen a number of the newer hybrids that do so well here in St. Louis.

Roses need to be given a good watering every two weeks and a feeding of liquid fertilizer should be carried out immediately – if it has not been done within the last three or four weeks – and repeated again in early August to make up for the extra amount of water that is going into the ground at this time of year.

FUNGUS CONTROL

Continue to spray for the control of fungus and bacterial leaf spot. If this continues to be a problem, Acti-dione will be instrumental in bringing this under control provided it is sprayed thoroughly underneath the leaves and then on top.

Ground conditions continue to be very dry. After the past year of drought, unless heavy watering is carried out, many trees will suffer even more this coming winter. Heavy waterings are recommended at regular intervals. For large trees, it is advisable to let the hose run continuously for several hours to penetrate deep or to use the Ross root feeders to get the water down to the root system. Also, tree feeding can be done provided it is done early this month. The Jobe Tree Spikes are excellent and are easy to apply according to the instructions.

It is important that all plants receive a good heavy mulch to control ground moisture conditions and to prevent heavy frost from entering the ground during winter months.

SPRING BULBS

Bulb catalogs for spring bulbs have now come out and this is a good month to get your order in for tulips, daffodils, hyacinths and other fall bulbs that should be planted during the months of September and October. Orders placed now ensure arrival in plenty of time to get the ground prepared and the bulbs in at the proper planting time.

Poison Ivy, which may be growing in shrubs or other plant material, can be easily controlled by using 2-4-D with silvex. This should be mixed in a small plastic bucket and applied just to the leaves with a paint brush, making sure it does not get on any other plant parts. This will be absorbed through the tips of the poison ivy down into the roots and effectively bring it under control without having to revert to heavy digging.

Phlox will need to be sprayed heavily with fungicide or sulphur to keep the mildew under control. Flower heads should be removed once flowering is over to prevent seeding which often causes the plants to appear to revert back to poor colors.

Azaleas, rhododendruns and hollies can benefit from a feeding early this month with iron chelate and cottonseed meal or blood meal to get them back into good color before fall arrives. The use of Epsom salts along with the iron chelate will help to assimilate iron much faster through the plants and will assure that the plants will ripen off and mature better in the fall.

PRUNING

Pruning of trees can be done this month with the removal of soft growth or weak growth or the removal of branches which are rubbing against one another. The main purpose of pruning is to open up the center of the plant to allow for better air and light circulation. Cuts over ½ inch should be given a good application of tree paint to prevent rot from setting in.

Avoid pruning of spring flowering shrubs now because buds are set and pruning would mean less flowering next spring. Heading back of long loose branches is all that is required at this time of year on these plants.

—Robert J. Dingwall
Chief Horticulturist

Garden on the Air

The life of Henry Shaw, founder of the Missouri Botanical Garden, will be the subject of the Garden's monthly radio program on KSD July 3.

The programs are broadcast the first Sunday of every month at 10 p.m., hosted by Robert Dingwall, chief horticulturist at the Garden.

For the July 3 program, James Reed, Garden chief librarian, will be interviewed about Henry Shaw. A specialist on Shaw, Mr. Reed is now writing a biography of St. Louis' best-known philanthropist and Garden benefactor. The interview, which will last for about 25 minutes, is timely because of Shaw's birthday, July 24.

Members of the Henry Shaw Cactus Society prepare cactus plants for the annual cactus show, scheduled for August 27 through September 5 in the Floral Display House. The organization sponsors the largest annual cactus show in the Midwest.

NEA Grant Supports Post-Doctoral Education

The Garden has received a one-year grant of $21,000 from the National Endowment for the Arts, to support two post-doctoral positions in the Botany Department for on-the-job-training in herbarium management. The reason for such a training program at the post-doctoral level is that most graduate schools overlook this important aspect of the professional taxonomist's duties: how to acquire and care for herbarium collections and how to make them available to other botanists for study.

The botanists, who arrive this month to spend a year at the Garden, are Dr. Michael O. Dillon and Dr. Peter S. White. Dr. Dillon, originally from Kansas City, received his Ph.D. degree from the University of Texas at Austin. He has travelled extensively in Mexico and South America and his research interests are in the biosystematics of the Asteraceae, the sunflower family.

Dr. White has graduated from Dartmouth College, where he studied upland forest vegetation in New Hampshire. He has also had tropical experience in Costa Rica and Panama, although his main interests have been in the flora of the Northeast.

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MISSOURI BOTANICAL GARDEN BULLETIN
2345 Tower Grove Avenue
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Carp Contribute Big Splash to Japanese Garden

The truck looked like a circus vehicle with its colorful red and white letters and paintings of fish. And its passengers looked like any other group of arriving tourists, pressing their noses to the glass windows of their compartments.

But the passengers were fish, not people, and the truck belonged to the Lambrich Bros. Live Fish Co., Imperial, Mo., driven by owner Gene Lambrich. "The passengers enjoyed a comfortable, cool ride," said Mr. Lambrich.

To the truck was hitched a flatbed trailer loaded with 18 fishtanks carrying approximately 300 fish — almost 4000 pounds of ordinary and German carp. The truck arrived at the Garden on Sunday, June 12, from Oshkosh, Wis., and discharged its lively passenger load into the 4½-acre lake in the new Japanese Garden, Seiwa-En.

The carp, each tipping the scales at about 15 pounds, traveled for 20 hours in freshwater tanks from Lake Butemorts, their breeding place near Oshkosh.

Why did the carp come to the Japanese Garden? Not because the Garden is planning to allow fishing in the quiet waters of its newest outdoor spectacle.

"Carp like to eat weeds and algae," said John Elsley, curator of hardy plants at the Garden. "This will help to keep the new lake healthy."

The recommendation to stock the lake with carp came from Ken Perry, an authority on lake management at the Missouri Department of Conservation.

The first of some 300 carp splash their way into the Japanese Garden lake. The fish will help control weeds and algae and were obtained following a recommendation by Ken Perry of the Missouri Department of Conservation.

Volume LXV Number 8
August 1977

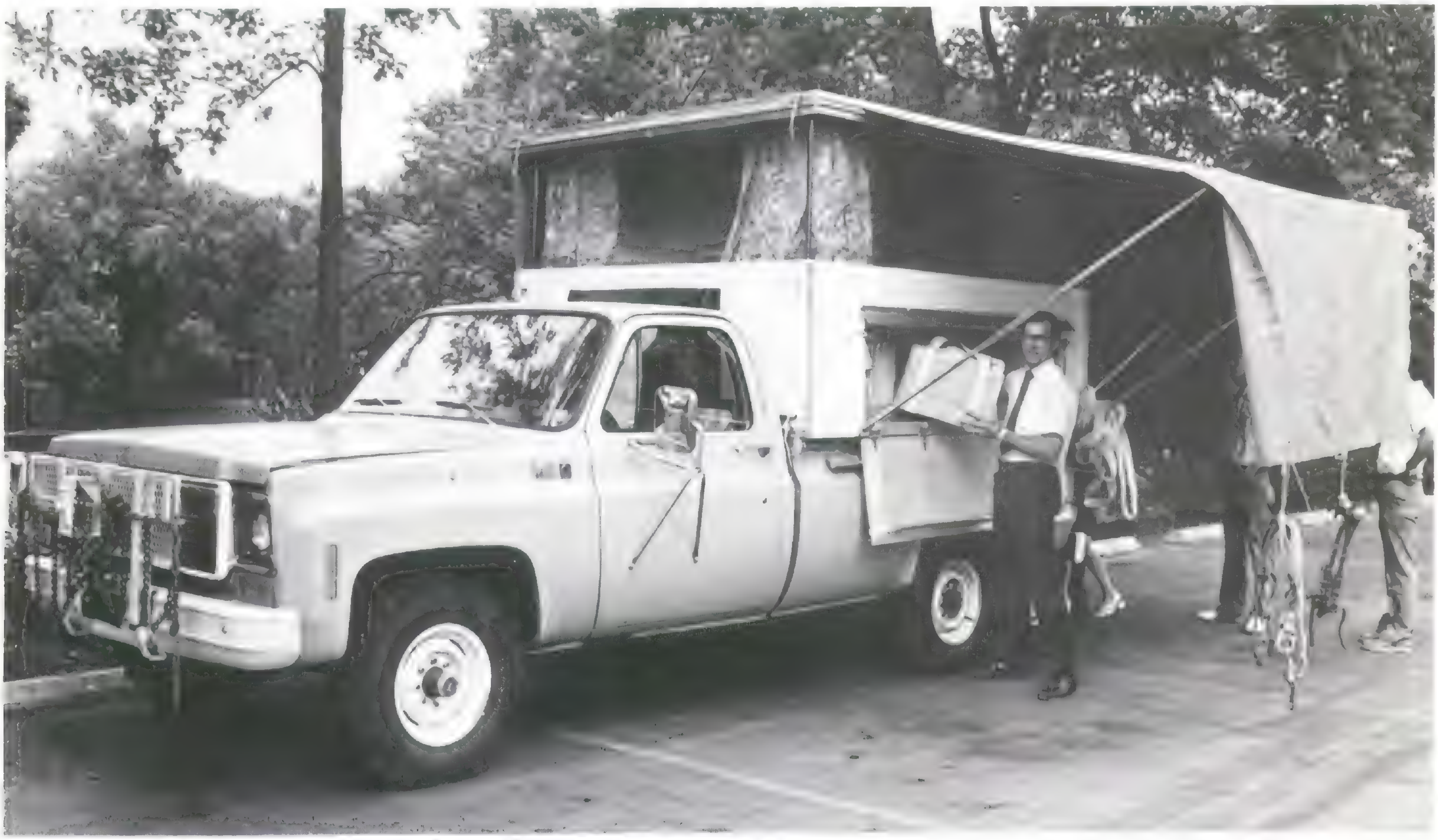
Dr. Croat, Lab on Wheels Explore Central America

The March issue of the *Bulletin* contained an article about the research activities of Dr. Thomas Croat of the Garden's Botany Department. Dr. Croat is involved in an intensive study of the genus *Anthurium* of the aroid family (Araceae) as represented in Central America and Mexico. That article mentioned that he was preparing for additional field work in these areas. Now the Garden has received a grant from the National Geographic Society to support his work this summer and in the early fall, and Dr. Croat recently left St. Louis for Central America.

The vehicle in which Dr. Croat is travelling is probably unique in the world. To the casual observer it appears to be no more than one of the thousands of camper-equipped pick-up trucks which are so popular these days. However, closer inspection shows that the Croat truck is a mobile botanical laboratory. Included in the truck's equipment is a propane gas powered plant dryer, which occupies a large area along the side of the truck back. This dryer is constructed so it can be run continuously, both while the truck is in motion and while stopped for the night. The dryer allows Dr. Croat to process more than 100 plants per day. Propane was chosen as the power source — it is readily available in Central America — and he carries a 100-pound cylinder of this fuel with him. The camper is equipped with collapsible awnings on all four sides to provide shelter from the torrential tropical rains or sun. The area under these canopies is used for processing the large numbers of *Anthurium* specimens which Dr. Croat will be gathering each day in the forests of Central America. Tree clipper poles are stored on the sides of the camper, so that they may be readily available for short stops to collect particular specimens.

The inside of the camper back is equipped with a stove and refrigerator and large amounts of storage space both for food and for dry plant specimens. At the rate of more than 100 specimens a day, the inside of the camper will be filled quickly with dried plants, and these must be regularly packed and shipped back to St. Louis for further processing. Live plants will also be gathered and shipped, to St. Louis by air freight for cultivation in the Garden's greenhouses and further study, particularly of flowering behavior.

Dr. Croat emphasizes that the vehicle was designed to be as completely self-contained as possible, so that he could visit remote areas of Central America for long periods of time and not have to depend upon drying facilities at various museums and universities. Food and fuel supplies are available throughout Central America as are the post offices from which he will ship back his specimens. Thus, with his new vehicle, he can concentrate his total efforts on his job — collecting plants for his and other studies.



Dr. Thomas Croat, bound for Central America, demonstrates the capabilities of his botanical laboratory on wheels.

Dr. Klein Appointed Director of Morris Arboretum

Dr. William McKinley Klein, Jr., the Garden's assistant director and one of its major assets, has been appointed director of the Morris Arboretum of the University of Pennsylvania in Philadelphia.

He will leave the Garden — better than he found it — on August 1.

In farewell remarks before the Garden Board of Trustees, Dr. Klein summarized his feelings for the institution he has served for nearly five years:

"The measure of greatness of an institution is not its age and what it says it can do, but rather the services it provides to the community. And I believe the Missouri Botanical Garden serves the educational needs of Missouri at a level which is setting the standards for cultural institutions in the state.

"The most exciting developments taking place at a botanical garden anywhere in the world are today taking place at the Missouri Botanical Garden . . . out front and running well ahead of all other botanical gardens. This vitality is reflected in the tremendous physical improvements which have been made at the Garden and the great expansion in public service to the community."

During his five-year tenure as assistant director, Bill Klein has had a lot to do with keeping the Garden "out front and running well ahead."

A native of Galveston, Texas, Dr. Klein earned his bachelor's and master's degrees from Colorado State University before taking his doctorate in 1964 from the Claremont Graduate School and University Center in Claremont, California. The topic of his doctoral dissertation was a biosystematic study of four species of evening primrose.

From 1961 to 1965, Dr. Klein served as an officer in the U.S. Air Force, assigned to the Biological Systems section of the School of Aerospace Medicine at Brooks Air Force in Texas. His research activities were concerned with studies of plants being tested as components of life support systems for extended missions in space.

From 1965 to 1972, Dr. Klein was assistant professor, later associate professor in the Botany and Plant Pathology Department of Colorado State University. Also during this period, he served as co-principal investigator for the Resource Inventory of Colorado and co-principal investigator for a study of the effects of disturbance on vegetation on Amchitka Island in Alaska. Dr. Klein's teaching and research interests, in fact, have taken him to Afghanistan, the Aleutian Islands, Indonesia, Mexico and England.

When named the Garden's assistant director in 1972, Dr. Klein assessed the potential of his new institution:

"I see unique opportunities in the areas of public education and the promotion of basic botanical interests. The Missouri Botanical Garden has a proud tradition in both of these areas and, under the leadership of Dr. (Peter H.) Raven and with the new facilities, I feel the potentials have been greatly extended. I'm looking forward to becoming a part of that tradition."

Dr. William M. Klein, outgoing assistant director of the Garden.

In his position as the Garden's assistant director, Dr. Klein was quick to become part of the institution's tradition of study and service. In the area of education, he worked to expand the scope of Garden programs and increase its level of service to the community. Specifically, he sought successive grants from the Cooperating School District, a not-for-profit organization of county school districts, which helped to make possible a broadening of the Garden's educational reach.

Additionally, a teacher training program was implemented at the Garden under Dr. Klein's guidance, supported by a grant from the Office of Environmental Education, U.S. Department of Health, Education and Welfare. Through other grants, Garden programs have become part of the curriculum of the city's Magnet Schools.

In 1975, Dr. Klein was named the first chairman of the Garden's new Ecological Services Department, established to study and attempt to predict man's continuing impact on his environment. Even before his appointment as the Garden's assistant director, Dr. Klein's interests had taken a strong turn toward environmental concerns and the application of basic botanical data to problems of land-use planning. His leadership of this new department, therefore, was destined to be more than productive — it eventually

(Continued on Page 4)

DR. KLEIN ACCEPTS NEW POSITION

(Continued from Page 3)

led to contracts with the U.S. Army Corps of Engineers, Union Electric Co., a state planning agency, the East-West Gateway Coordinating Council and the St. Louis Community Development Agency.

This response demonstrated "that the kinds of services the Garden could provide are very much in demand," Dr. Klein said.

Also in demand has been another service that the Garden will lose with Dr. Klein's departure – the work of his wife, Janet Klein. Mrs. Klein has worked tirelessly over the years as a Garden volunteer, using her unique talents to delicately illustrate botanical specimens for the Garden's herbarium and publications.

In his new position, Dr. Klein will direct the operations of another highly respected botanical institution. The Morris Arboretum, maintained by the Morris Foundation and administered by the University of Pennsylvania, is a cultural, educational, research and public service institution in botany, horticulture and related plant sciences.

Its work began unofficially in 1887, when John and Lydia Morris acquired a summer property in Chestnut Hill, Pa. For a span of 45 years, the Morrises lavished their wealth, attention and interest on the property, transforming it into a charming and aesthetic collection of trees and shrubs. It was late in Lydia Morris' life before the idea was formed to bequeath the property for the enjoyment of future generations.

The University of Pennsylvania assumed administration of the Morris Arboretum in 1932, and set about establishing a scientific as well as aesthetic institution in the Philadelphia area. The result is a mixture – an institution of botanical significance which has retained the grace and beauty intended by its founders.

Programs supported by the 175-acre Arboretum are similar to those conducted by the Missouri Botanical Garden – maintenance of a display of one of the finest collections of trees and shrubs in the nation, education for the community on all levels and botanical research.

After he assumes the Morris Arboretum directorship, Dr. Klein, with his wife and four children, will reside in the Chestnut Hill area. In his closing remarks before the Board of Trustees, he praised the accomplishments of the institution he was leaving:

"I know that all of you take a great deal of pride in what's happened here over the last six years. And well you should. It has been my great pleasure and honor to have been associated with the Garden during this very critical stage in its development.

"And let me wish you every success and say that I stand ready to assist in any way I can to advance the aims and objectives of Shaw's Garden which will always hold very special meaning for me."

THE ASCENT OF MAN

"The Ascent of Man", Dr. Jacob Bronowski's highly acclaimed, 13-part exploration of the development of man as seen through the history of science, has been scheduled for a Garden showing.

The films will be shown on Wednesday from September 7 to November 30, in the Lehmann Building Auditorium. Produced by BBC-TV and Time-Life Films, the series charts man's progress from the vantage point of the scientist-philosopher.

"Among the multitude of animals which scamper, fly, burrow, and swim around us, man is the only one who is not locked into his environment," says Dr. Bronowski. "His imagination, his reason, his emotional subtlety and toughness, make it possible for him not to accept the environment, but to change it. And that series of inventions, by which man from age to age has remade his environment is a different kind of evolution. I call that brilliant sequence of peaks 'the ascent of man.' "

Tower Grove House on Tour

Tower Grove House, Henry Shaw's restored country home at the Garden, will be part of the "all around town" tours of Historic Pilgrimage '77, a nine-day series of historic tours sponsored by the Missouri Historical Society and the Landmarks Association of St. Louis, Inc.

Tower Grove House is the first stop of the series' Tour No. 2, scheduled for Tuesday, September 27.

The tour, along with six others scheduled between September 26 and October 2, will begin at 9:30 a.m. at the Missouri Historical Society at the Jefferson Memorial in Forest Park. The cost for each one-day tour is $15, which includes lunch, transportation by air-conditioned bus and all admission fees.

Reservations will close September 15. For further information, contact Pilgrimage '77 in care of the Missouri Historical Society.

Trivets, T-Shirts and Treasures

The souvenir-minded – collectors, travelers and friends of the Garden – will find four new treasures this summer in the Garden Gate Shop.

The special features are children's and adult T-shirts, illustrated with a graphic floral design in light green on white fabric; ceramic mugs and trivets, also with floral designs, and souvenir pens inscribed "Missouri Botanical Garden."

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Telephone Pioneers Pay Garden Call

For five active hours last spring, some 50 Telephone Pioneers paid their annual call at the Garden to plant, prune, weed, mulch and perform a wide variety of other volunteer services.

"This group has made an annual visit for the past two years," said Robert J. Dingwall, chief horticulturist, "and have contributed a tremendous number of man-hours to the Garden's maintenance program. The work of this group is greatly appreciated."

Telephone pioneers of all ages volunteer their services to help maintain the Rose Garden, top, and the English Woodland Garden.

This year's work program, in the English Woodland Garden, consisted of weeding throughout the beds and adding additional mulch to the paths. The group also assisted in the Rose Garden — planting, pruning and general maintenance work. Other projects were undertaken in the Japanese Garden and in other Garden areas.

Kent A. Guske

New Development Director

Kent A. Guske, holder of a master's degree in education administration and an executive with wide experience in developmental and fund-raising activities, has been named to the new position of director of development at the Garden, it was announced by Dr. Peter H. Raven, Garden director.

Mr. Guske, a Michigan native who earned his bachelor's degree at Georgia Southern College and his master's at Georgia State University, assumed his new duties in June. He will direct the organization and administration of a wide variety of developmental and fund-raising programs at the Garden.

In 1969, following a tour of duty with the Air Force, Mr. Guske joined the United Way of Atlanta and helped organize and implement a series of fund-raising campaigns which raised more than $10 million annually between then and 1972. After taking his master's degree, he joined the United Way of Birmingham, Ala., in a similar capacity.

In 1976, Mr. Guske became director of the Development Division of Historic New Harmony, Inc., New Harmony Ind., a position he held until accepting the developmental position at the Garden. Historic New Harmony, Inc., is a not-for-profit organization established by the State of Indiana to recreate the cultural and educational heritage of New Harmony and restore its historic area.

The New Harmony restoration project is modelled after the Aspen Institute, which promotes the arts and humanities, and Colonial Williamsburg, Va., which preserves an earlier way of American life.

New Harmony, now a National Historic Landmark, was established in 1814 by German pioneers. In 1825, English reformer Robert Owen founded a cooperative community there based on mankind's salvation through "rational" thinking, free education and cooperation.

Owen returned to England in 1827, but his associates stayed on to develop one of the most notable pre-Civil War cultural centers in the nation. A laboratory established there was headquarters for what became the U.S. Geological Survey.

For his Air Force service, Mr. Guske received the Air Medal, the Vietnamese Service Medal and the National Defense Medal. In 1969, he was the recipient of the Outstanding Young Man of America Award.

Mr. Guske and his wife, Jolane, have three children — Kurt, 12; Kevin 10; and Melissa, seven.

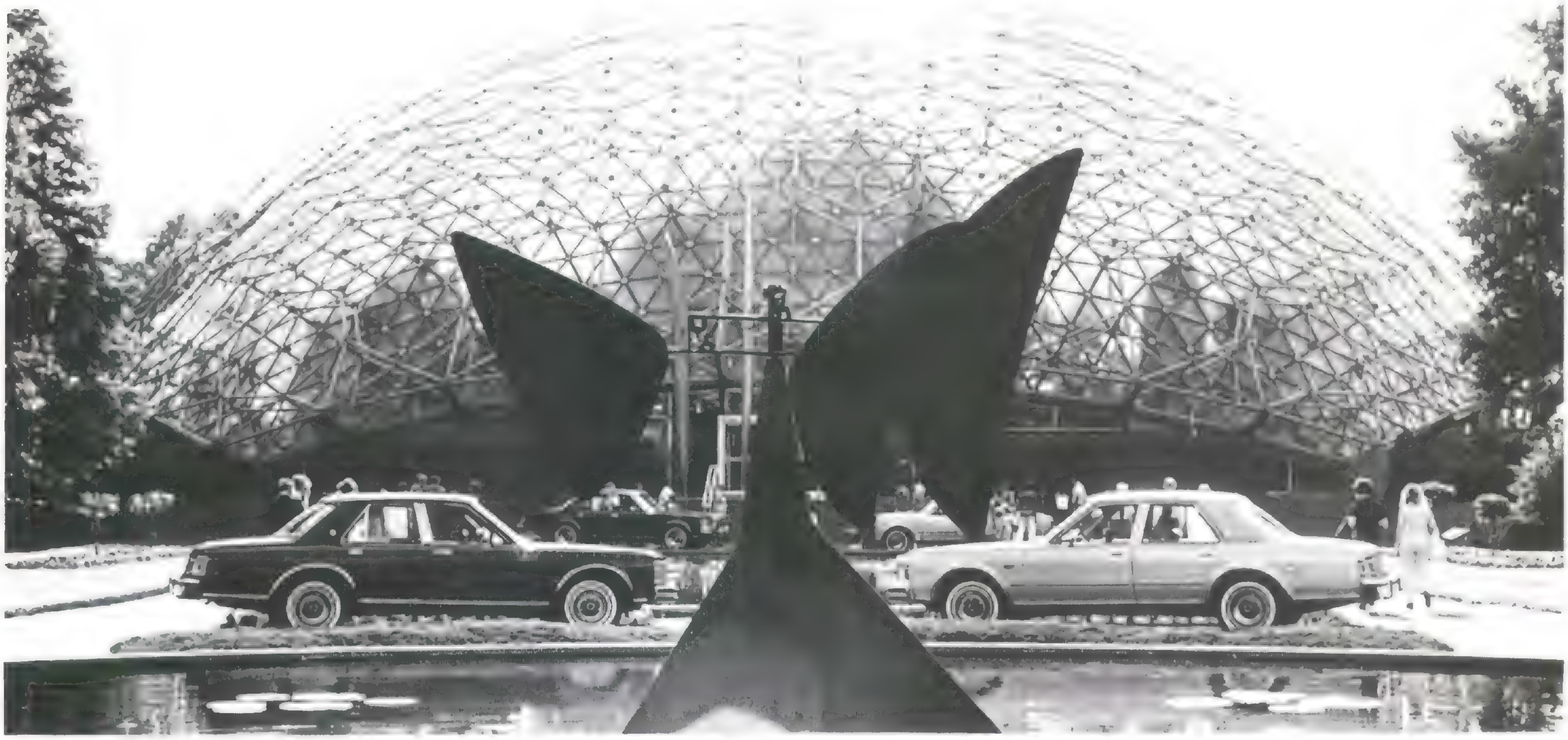
"Sense of Wonder" in Nature

A turtle and friends, young participants in the recent "Sense of Wonder" nature program at the Shaw Arboretum.

One of the basic aims of Sense of Wonder, a parent-child nature program held recently at the Shaw Arboretum, is the building of family relationships through shared outdoor experiences and activities. Parents and children who participate in this popular nature program experience feelings and understanding about the natural world and the place of each person — adult and child — within it.

The program's two week-long sessions were held in June: one week for younger children, four to six years old, and their parents; and a second week for children aged seven to 10 and their parents.

GARDEN VISITORS: *A. Timon Primm III, right, a member of the Garden Board of Trustees, welcomes St. Louis Mayor James F. Conway and Mrs. Vivian Eveloff to the Japanese Garden. Mrs. Eveloff served on the arrangements committee for "A Midsummer Night's Dream," a cocktail reception held at the Garden in Mayor Conway's honor.*



Photographed before the Climatron are two 1977 Chryslers from Chrysler-Plymouth South, sponsors of the Garden's recent annual Rose Evening. On hand for the occasion was Maury Wichmann, general manager of the automobile dealership. Wayne Goode is the new president of Chrysler-Plymouth South. The Alexander Calder sculpture, "Five Rudders," is on loan from the Steinberg Gallery at Washington University through October 31 in the main lily pool near the Garden's Main Gate.

Environment on Display

An environmental quilt — reflecting the experiences of children who spent a night at the Arboretum — was part of a recent Garden display by students whose teachers took part in the Environmental Education Training Project during the past school year.

All fifth graders, the children drew what they saw at the Arboretum on squares of fabric and painted the designs with bright acryllics. The squares were sewn together to form a quilt of colorful butterflies, flowers, frogs, meadows, bugs, a turtle and other remembrances of the Arboretum.

The quilt was only one item on display at the information session of the Environmental Education Training Project, a cooperative program between the St. Louis Public Schools and the Missouri Botanical Garden, funded by a grant from the U.S. Office of Environmental Education to the St. Louis Public Schools.

Project co-directors were Edward P. Ortleb, Science Supervisor at the public schools, and William M. Klein, Garden assistant director.

Other display items were a model of a cross-section of a tree showing its circulation system; a book of oral histories of neighborhood life based on interviews of older community residents; photographs of children acting out environmental plays, and many posters, artwork and writings.

Also included were trophies and awards given by the City of St. Louis to the children for community service in helping to improve environmental quality.

The goal of the project is to develop a model for training teachers of grades 4, 5, and 6 in a multidisciplinary, multi-process approach to environmental education. After the training model has been tested, evaluated, and refined, an Environmental Education Training Guide will be written for use in the St. Louis system, as well as other school systems, state education departments, and institutions of higher learning throughout the country.

During the school year 19 city teachers received training which stressed important concepts of environmental education and ways to teach these concepts in all disciplines of the curriculum. Also, teachers were trained to use community institutions and other resources for meaningful learning experiences for students.

Christmas Card Offer for Garden Members

A Christmas card showing the new Japanese Garden, in a breathtaking, full-color etching-screened scene, is available to Garden Members in a special offering prior to public sale this fall.

The one-fold Christmas card, inscribed on the inside with "Seasons Greetings", is 8-1/8" x 5¾" and come 25 to a box.

Until September 15, Members may purchase these unique Christmas cards at $3.50 per box, ordering them through the Garden Gate shop.

After September 15, the cards will go on sale to the public at $4.50 per box of 25 cards.

The Japanese Garden, Christmas card-style, etching-screened from a color photograph by Jack Zehrt.

Forest Park, Riverfront are Garden Study Topics

Supported by a $30,000 grant from the St. Louis Community Development Agency (CDA), the Garden's Ecological Services Department is conducting an open space study in Forest Park and on the city's northern riverfront.

The resulting inventory will provide the city's Park Department and the Port Authority with environmental information on three of St. Louis' open spaces — the Kennedy Memorial Forest in Forest Park, the eastern section of Forest Park and four miles of the Mississippi River floodplain just south of the city waterworks. Information on soils as well as on vegetation is being collected. For next year, an expanded project has been proposed which would include a teacher training program on the use of urban open spaces.

Richard H. Daley and Helen Sussmann Parker of the Ecological Services Department are conducting the study for the Garden. The department has completed similar studies in the past several years. In 1974, a vegetation study was conducted of the Mississippi and Illinois River floodplain beginning just a few miles north of the city limits. A survey was completed in 1976 of the plants in the new St. Joe State Park, Flat River, Missouri. The experience gained in these previous inventories is being applied in this project to help plan the best possible use of our urban resources.

Forest Park includes nearly 1300 acres and was the site of the 1904 World's Fair. At that time, there was a controversy about cutting the dense forests to make room for the Fair, and now only a small native forest tract remains in the park. This forest, called Kennedy Memorial Forest, lies in the southwest corner of the park bordered by Skinker and Highway 40 and is in striking contrast to the landscaped remainder of the park. The Garden project includes comparing the kinds of trees, the number of species, and the vigor of the trees observed in the Kennedy Forest with those in the landscaped area on the eastern end of the park across from the Barnes Hospital complex.

These two areas of Forest Park also will be compared to the vegetation along the Mississippi River, south of the city's waterworks. It might seem that the trees in Forest Park and those along the Mississippi River would be quite different, but floodplains are the natural habitat for many city trees. Sycamore, elms, cottonwoods, pin oak, and silver maple, for example, are all floodplain species and are among the most commonly planted trees in the city.

The information collected will be presented in a report with accompanying maps of vegetation and other environmental variables at the study sites. The information can then be used by CDA, the Department of Parks, Recreation and Forestry, and the Port Authority in planning these open spaces for their most productive uses.

The Kennedy Memorial Forest in Forest Park, one of the locations under study by the Garden's Ecological Services Department.

Gardening in St. Louis

With August the prime month for vacations, little attention often is given to the garden this month. However, a number of projects are necessary if the garden is to remain in good condition; also, plans should now be laid for what to do this fall.

Fall vegetable seeds should be ordered and planted by the middle of this month. These include many of the cool crops, such as cabbage, cauliflower, broccoli, spinach, lettuce. Such plants, put in between the middle and the end of August, will grow very well with the cooler nights which come in early September and they will mature in late fall when other vegetables are beginning to dwindle. Many of these will take severe cold and can be harvested right through the end of the year. Cool crops which do not do well here in St. Louis during the summer months are ideal ones to plant the latter part of this month for fall use.

ADDING FERTILIZER

If possible, the garden should be reworked, adding plenty of organic matter and a balanced fertilizer just prior to planting. Vegetable seeds need to be planted a little deeper than they were during the spring, because of drier conditions. However, it is important to see that they are kept adequately watered until germination does occur. Biennials, such as sweet william, hollyhocks and others, may be planted this summer by sowing the seed directly in the garden where they are to grow or starting them in flats or cold frames, transplanting them by mid-September to their permanent place for early bloom next year.

Keep weeds under control and spray to control mildew and black spot of roses. The last feeding of liquid fertilizer for roses should go on by mid-August. No feeding should be attempted after this, to allow the plants to harden off at the proper time.

Dahlias need ample water now and should also receive liquid fertilizer at least every two weeks, keeping side shoots pinched off and disbudding the side buds to leave one large bud for good bloom. Fall feeding with liquid fertilizer for chrysanthemums will also mean better flowering during the next month or two. Late August is a good time to make geranium cuttings. Take wood that is not too young (old wood is too hard), cut long enough so that three leaf nodes are below surface of soil and two above. Soil median should be two parts peat moss, two parts sand, and one part good soil, plus bone meal. After cutting, let sit for several hours so callous can form. These plants will root within four to six weeks, at which time they can be potted into four inch pots and carried on for indoor bloom during the winter months.

GREENHOUSE CLEANING

Home greenhouses should receive a thorough clean-up this month. Spray adequately under the benches as well as the benches themselves to control any algae or insects. August is an excellent time to spray to control slugs and sawbugs that may have come in during the summer months. A clean greenhouse this month will mean better success as the greenhouse becomes more active from mid-September on as you move your plants indoors.

Iris clumps may be divided now, cutting the tops back to within three to six inches, discarding the centers and using the outer rhizomes for planting back in the garden. They should be thoroughly dusted with a good fungicide, if necessary, and not planted too deep. Keep them moderately moist until new root systems are established and then mulch in mid-September.

Plan this month for fall bulb planting starting in September. New bulbs will be arriving the early part of September and it is important you get your orders in early to ensure good quality bulbs. Tulips, daffodils, hyacinths and lilies all may be purchased in September. Madonna lilies are an exception and should be purchased this month or redivided, if not done earlier.

SOD WEB WORM

Sod web worm, evidenced by small gray moths flying up from the lawn or brown patches, should now receive further treatment with the use of Diazinon with Pyrethrum, a tablespoon of each to a gallon of water, watering this in when the lawn is adequately moist or followed with a good watering to get it down into the soil two to three inches deep. This will also need to be repeated in early September to result in good control.

— Robert J. Dingwall
Chief Horticulturist

Carolyn Ashford, left, director of the Missouri Department of Natural Resources, presents check for $137,000 to C. C. Johnson Spink, Garden trustee. The contribution, from the Federal Bureau of Outdoor Recreation, will be used to acquire the property on which the Adlyne Freund Education Center is being developed at the Shaw Arboretum.

Walter Stricker Retires

At 81 years of age and following 43 years of service to the Garden, Walter Stricker has decided to retire.

Again.

Mr. Stricker joined the Garden staff in 1934 as part of the grounds crew at the Shaw Arboretum at Gray Summit. He eventually assumed the duties of firing the boilers to provide heat in the winter and doing greenhouse maintenance work during the summer months.

Shortly before his first retirement, he was transferred to the Garden to assist in the orchid ranges. And after his retirement – in 1961 at the age of 65 – he returned to those duties on a two-day-a-week basis. Now Mr. Stricker has chosen to retire again and tend his home garden of dahlias, gladiola, regal lilies and roses.

Agave Exhibit Part of Cactus Show

Plants of the genus *Agave* from the Desert House collection will be on special display during the upcoming Henry Shaw Cactus Society Show, to be held August 27 through September 5 in the Floral Display House. The Henry Shaw Cactus Society, with more than 200 members in 17 states and foreign countries, was founded at the Garden in 1942 by the late Ladislaus Cutak.

During the show, the Society's 35th, entries in 111 classes will compete for a silver trophy. Junior members, aged five to 15, will also compete. This year, for the first time, a new class for photography and painting has been added.

Mrs. Betty Demzik, vice president of the Society, is show chairman.

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MISSOURI BOTANICAL GARDEN BULLETIN
2345 Tower Grove Avenue
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Bird-at-rest detail of the Garden's birds-in-flight Waldemer Fountain (see Page 8).

Garden Launches $6 Million Campaign

Robert R. Hermann

A campaign to raise $6 million for Garden improvements and capital construction — including a new entrance, new building with enlarged educational quarters, visitor orientation center and floral display hall — was launched in August by the Garden's Board of Trustees.

The announcement was made by Tom K. Smith, Jr., Board president.

The one-year campaign will be under the direction of Robert R. Hermann, member of the Garden Board and president of the Standard Container Company of St. Louis.

The major element in the improvement plan is a $4.7 million structure to be located on the north side of the Garden, facing Shaw Avenue and housing a new entry, a visitor orientation center and expanded educational and display facilities.

"The need for the campaign evolved out of the Garden's extraordinary growth in recent years and rising demands for services," Mr. Hermann said. "Our present facilities are not adequate to handle the increased attendance, membership, educational programs and research projects.

"In 1976, more than 40,000 adults and children took part in Garden seminars, workshops, teacher training sessions, environmental education programs, art courses and lectures, in space designed to accommodate half that number," he said.

Visitors now enter the Garden in front of the Climatron on the east side of the Garden. "The new entrance will orient visitors to the whole Garden, not just the Climatron area, by introducing them to all aspects of the Garden and interpreting for them their botanical and environmental significance," Mr. Hermann said.

"The new building will allow us to prepare visitors for the rewarding experience of enjoying the Garden and understanding its aims, as well as the importance of plant life on earth, through a comprehensive overview of the Garden's potential for illustrating and conveying botanical information."

The new building will also provide climate-controlled space for floral displays, the Plant Shop, the Garden Gate Shop and eating facilities.

Other components of the campaign include a center for maintenance operations, now scattered throughout the garden, and expanded parking facilities near the entrance.

Mr. Hermann said the Board realizes it is attempting to raise $6 million in a highly competitive market.

"But the Garden is different from all other cultural institutions in St. Louis," he said. "The Garden is an institution measured by world, not local or national, standards and provides the best return on the cultural dollar of any institution in the city.

"The budget has been balanced for the past five years. We have been steadily accumulating endowment, have broadened our base of annual support and have increased our income through membership, sales and attendance."

The $6 million campaign completes the final phase of a comprehensive Master Plan formulated in 1973, two years after Dr. Peter H. Raven became director of the Garden.

Volume LXV Number 9
September 1977

Miss Rose Henke: *Profile of a Volunteer*

While sorting through a stack of Garden *Bulletins* from many years ago, a library staff member came across the name of Rose Henke, mentioned in an article written by Edgar Anderson, noted botanist and one-time Garden director.

Miss Henke, the article stated, was at the time "a Girl Scout working on a merit badge on trees".

Today, Rose Henke is one of the Garden's most dedicated and loyal volunteers, working with the library staff and using her considerable linguistic abilities to translate publications into English from German and Spanish. Her principal duty is to check in the publications which arrive daily from all over the world.

Miss Henke has been a Garden volunteer for the past five years, finding easy access to the Garden by bus from her South St. Louis home, where she resides with her sister. She is a native of St. Louis, and in her youth, lived on Lafayette Avenue on a tract of land originally owned by Henry Shaw.

Miss Henke majored in languages — German, Spanish and French — at Harris Teachers College. She later earned a master's degree from St. Louis University and completed several courses in botany and languages at the University of Colorado. Prior to becoming a Garden volunteer, Miss Henke taught school for 38 years.

Art is one of Miss Henke's strong interests, both as an observer and a participant. She has visited museums in several cities and often obtains and studies catalogues of special museum exhibits in faraway places. She enjoys sketching in ink, frequently spending time at the Garden depicting Garden scenes and plants. In October, Miss Henke will travel to Japan with a Garden group and she hopes to sketch some of the beautiful gardens and other sights on the group's itinerary.

Miss Rose Henke

Miss Henke enjoys her work at the Garden, frequently commenting on the spirit of assistance and cooperation she finds among the staff and other volunteers.

The Garden, in turn, is very grateful for Miss Henke's loyal interest, her energy and her generosity. She is a volunteer whose roots, indeed, extend deeply into Garden history.

Christmas Card Offer

Until Sept. 15, Garden Members may purchase — at special discount — greeting cards for the Christmas season depicting a Japanese Garden snow scene, etching-screened in full color. The cards are sold 25 to a box, available to Members for $3.50. After Sept. 15, the cards will be offered to the general public at $4.50 per box. The cards must be purchased at the Garden Gate Shop. We are sorry but no mail orders.

Henry Shaw: *His Life and Legacy*

"Henry Shaw — His Life and Legacy," a new biographical booklet on the Garden's founder, is now available for sale at the Garden Gate Shop and Tower Grove House.

The 16-page, 8"x10" pictorial biography, written by James Reed, chief librarian at the Garden, and Jean Deken, assistant librarian, is filled with reproductions of historic photographs depicting the past and present glories of Shaw's Garden.

The new biography is available at $2.00 per copy.

The Arboretum: *Take a Walk with Wildflowers*

Beginning Sept. 6 and continuing through Oct. 25, the Shaw Arboretum again will offer its popular program of wildflower walks, offering Garden members and visitors an unparalleled nature experience in the northern Ozark wilderness.

Wildflower walks will be held each Tuesday at the Arboretum, from 10 a.m. to 2 p.m.

Betty Nelums and Nell Menke, well-known local naturalists, will conduct the walks, which start from the Visitor Center and follow the Arboretum's extensive woodland trails, which wind through a diversity of plant and animal communities characteristic of the northern Ozark region. Visitors may attend a single session or several, to view the progression of fall wildflowers.

There is no charge for the wildflower walks beyond the regular Arboretum admission, $1.00 for adults, $.50 for children. Members pay no charge. For additional information, call 772-7600, ext. 81.

Dr. Huckins Named Assistant Chief Horticulturist

Dr. Charles A. Huckins, curator of tropical plants, has been named assistant chief horticulturist for the Garden, it was announced by Dr. Peter H. Raven, Garden director.

Working directly under chief horticulturist Robert Dingwall, Dr. Huckins will be responsible for supervision of the growing ranges, propagation ranges, orchid ranges and their related activities, including, specifically, the annual flower shows in the Floral Display House.

Since August, 1974, Dr. Huckins has been curator of tropical plants and has played a major role in the redesigning, replanting and renovation of the Mediterranean House. Opened in January, 1976, the Mediterranean House is devoted exclusively to plants from the mediterranean regions of the world and is the only greenhouse in the United States committed specifically and exclusively to the culture of mediterranean plants.

Dr. Charles Huckins, the Garden's new assistant chief horticulturist, inspects the vines in the Mediterranean House grape arbor. Dr. Huckins served as curator of tropical plants from 1974 until his recent appointment was announced.

Dr. Huckins plans to continue and expand the series of small public exhibits introduced recently in the Climatron, the Desert House and the Mediterranean House which relate directly to the plants growing there — such as the Plants from the Bible exhibit in the Mediterranean House last spring.

"We want to utilize our living collections more effectively," he said, "and one of the primary ways is through public education, to make these plants more meaningful to our visitors."

Hundreds of schoolchildren and other groups saw the Biblical plant display, exhibited with appropriate quotations from the Old and New Testaments.

"Even though these plants are not native to Missouri," Dr. Huckins continued, "they are important to Missourians and all people in the temperate regions of the world, because they are a part of our planet. So these plants are interesting to the public for their assets other than their ornamental value."

Dr. Huckins, a native of Honolulu, received his bachelor's degree in biology from Brown University and his master's and doctoral degrees from Cornell. For his doctorate, awarded in 1972, he majored in plant taxonomy and minored in horticulture and plant anatomy and morphology. Dr. Huckins conducted postdoctoral research in Europe and has published several studies on ornamental crabapples and the evaluation of woody plants for landscape plantings.

Dr. Huckins' wife, the former Mathilde Germaine Demisay, is a charge nurse at Barnes Hospital. Dr. and Mrs. Huckins are residents of Webster Groves.

Dahlias and Garden 'Tour' are September Show Themes

Dahlias, those great round brilliant blooms, some on stalks more than six feet high, will receive the height of recognition September 24 and 25 when the Greater St. Louis Dahlia Society holds its thirty-ninth annual show in the Floral Display House.

The show is open to the public from 2 to 5 p.m. on Saturday, September 24, and from 9 a.m. to 5 p.m. Sunday, September 25.

Prospective exhibitors who are members in good standing of the Dahlia Society as of June 30 are eligible to exhibit in any section of the show. One section is open to non-members who have an amateur or novice show standing.

Information on registration may be obtained by calling Myron Roever, president of the Dahlia Society, 618-935-2208. Sam Bellamy is show chairman.

FALL HARVEST SHOW

The Fenton Garden Club will hold its Fall Harvest Show in the Floral Display House this month with hours from 2 to 5 p.m. on Saturday, September 17, and 9 a.m. to 5 p.m. on Sunday, September 18.

The theme is "A Tour of Shaw's Garden" and will emphasize the Lily Ponds, Climatron, Desert House, Rose Gardens Japanese Garden, and Tower Grove House.

Mrs. Kenneth Camp, Mrs. Joseph Cloud and Mrs. Oliver Miller are in charge of arrangements.

Crane Island Contributors

Presented by

EAST CENTRAL DISTRICT

Federated Garden Clubs of Missouri

on the dedication of

"CRANE ISLAND"

Japanese Garden

Missouri Botanical Garden

January 18, 1976

The above plaque at the Garden recognizes the contributions made by members of the East Central District, Federated Garden Clubs of Missouri, in giving Crane Island to the Japanese Garden.

Contributing garden clubs were listed in a recent *Bulletin.* Also among the contributors, omitted from the original list, are:

- the Fenton Garden Club
- Southwest Circle
- Brentwood #3 (Rose)
- Lakeshire #1
- Lakeshire #2
- Chesterfield Hill

Japanese Flower Arranging:
Ikebana Course Offered

An adult education course in Ikebana – Japanese Flower Arranging – will be offered by the Garden's Education Department beginning Monday, September 26, on four successive Mondays.

The ever-popular four-session course, an introduction to all aspects of Japanese Flower Arranging, will meet from 12:45 to 3 p.m. September 26, October 3, 10 and 17, in the John S. Lehmann Building on the Garden grounds. Instructors for the course will be Mrs. Walter E. Morris and Mrs. Daniel C. Poor.

Advance registration is required and those interested have been asked to contact the Education Department at 772-7600.

Fee for Garden Members is $20.00.

Landscape Design II Course Offered

The second in a series of landscape design courses, offered by the National Council of State Garden Clubs and co-sponsored by the Garden, will be given October 11-13 at the J.C. Penney Continuing Education Building on the campus of the University of Missouri-St. Louis.

The series is co-sponsored also by the Federated Garden Clubs of Missouri, the University of Missouri-St. Louis Continuing Education Extension Division and the St. Louis County Extension Center.

The three-day course will cover Architecture and Related Arts and Professions, The Professional Landscape Architect; Development of Landscape Architecture from 1840 to 1930; Urban Design; Landscape Graphics: Interpretation; Plants in Composition, Execution of Landscape Architectural Design; Site Design and Ground Form, Art and Nature Appreciation, and Elements of Landscape Architectural Design. Robert Dingwall, the Garden's chief horticulturist, will serve as instructor for "Plants in Composition".

The course fee is $25. It is open to the public and there are no prerequisites. Registration: 8:30 a.m., October 11 with lectures from 9:15-4:30 p.m., October 12, lectures from 9:00 a.m. to 4:15 p.m.

There will be reading assignments for those who wish to take an optional test October 13, based on readings from the following books: "An Introduction to Landscape Architecture", Laurie; "Landscape Architecture", Simonds; "The Book of Landscape Design", Ortloff and Raymore; and "Art and Nature Appreciation", Opdyke. These books may be purchased at the National Council of State Garden Clubs headquarters, 4401 Magnolia Avenue, on the Garden grounds. The books are also available to Members on loan from the Garden library.

For further information contact Dorothy A. Jones, UMSL Continuing Education Extension Division, at (314) 453-5961. To insure receipt of all necessary materials, interested persons should register well in advance.

The Landscape Design Study Courses are given in a series, the first held in October 1976. Course III and IV will be offered in successive years.

The purpose of the program from its beginning in 1952, has been to educate garden club members and the public in the knowledge and use of good landscape architectural practices. The series is of special value to those serving on park boards, highway commissions, planning and zoning boards, construction and development.

Chairman of the Landscape Design section of the Federated Garden Clubs of Missouri is Mrs. Eugene C. Sunnen.

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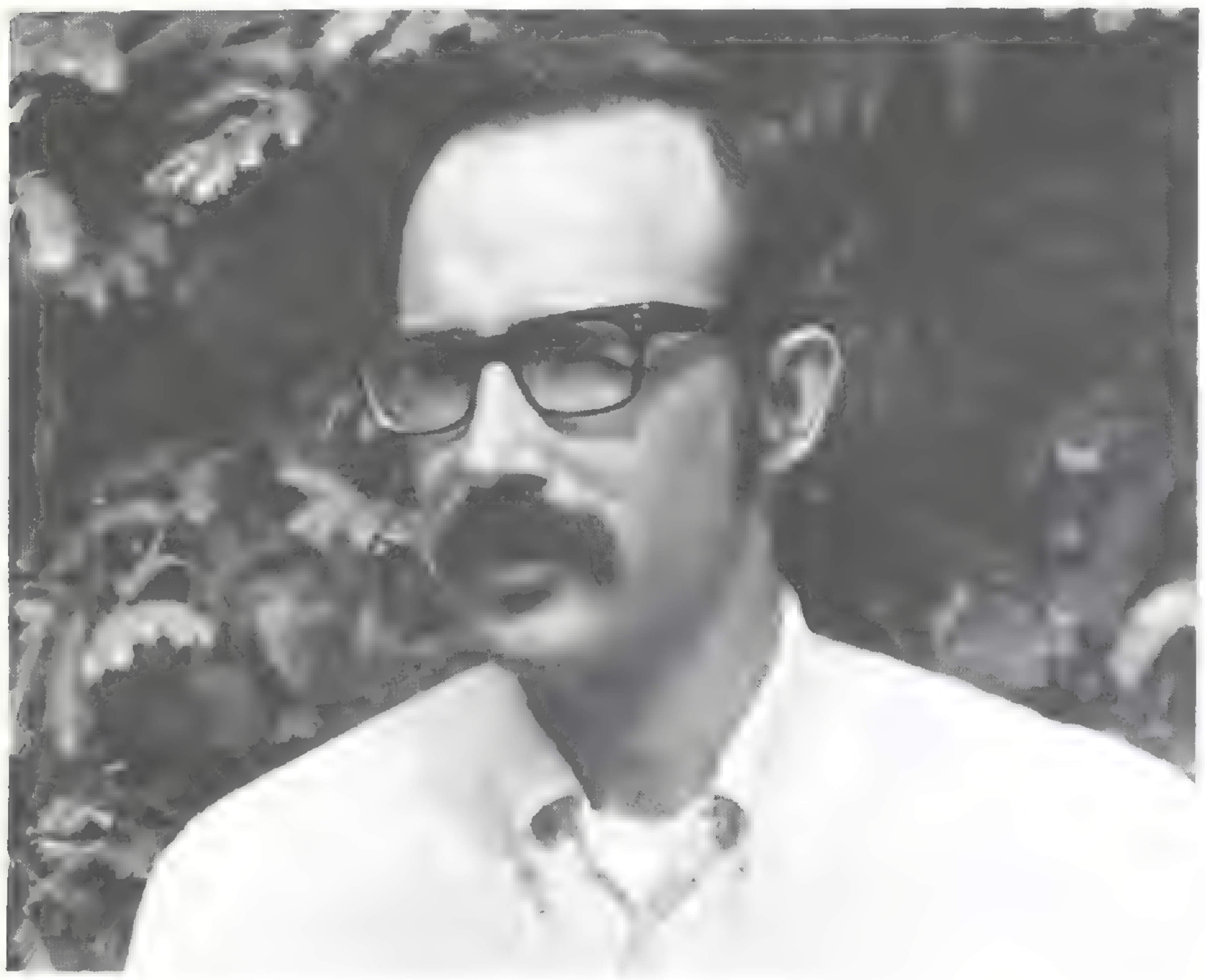
Stevens Goes to Nicaragua



Dr. W. Douglas Stevens

From a botanical point of view, the Central American nation of Nicaragua remains something of a mystery. Most of the countries of that region either have published or are in the process of publishing floras describing their native plants – an undertaking which requires a great amount of botanical exploration and collection.

Nicaragua, however, has no such flora.

To undertake botanical collection and ultimately produce a published manual flora for Nicaragua, the Garden has appointed Dr. W. Douglas Stevens as B. A. Krukoff Curator of Central American Botany. Following a brief orientation session at the Garden in June, Dr. Stevens departed for Nicaragua, where he will live for three years and conduct extensive collection activities.

Dr. Stevens, who received his doctorate from Michigan State University in 1976, is a specialist in the milkweed (Asclepidaceae) family.

The Garden is cooperating in the project with the Banco Central of Nicaragua, which is the loose equivalent of our National Science Foundation. The Banco Central is providing support for the purchase and maintenance of a field vehicle for use in the project. They have also built a new plant drying facility in Nicaragua and are setting up a herbarium there. In the future, the Nicaraguans hope to be able to send a student to the Garden for training in herbarium curation techniques, so that they can better manage their collection.

Another collaborator in the project is Dr. Frank Seymour of Gainesville, Florida, who is a Research Associate of the Garden's Botany Department. Dr. Seymour recently published an important flora of New England, and after completing that project has turned his attention to the study of the flora of Nicaragua. Dr. Seymour has made several collecting trips to Nicaragua and has amassed an important collection of Nicaraguan plants.

Israeli Botanist Lauds Garden Research Resources

The Garden's involvement and expertise in the flora of Nicaragua, where Dr. W. Douglas Stevens is currently studying and collecting specimens, led to a Garden visit last month by an Israeli botanist, Dr. Avinoam Danin.

It was the second visit to the Garden for Dr. Danin, who is conducting a soil/plant relationship study in the lowland rain forest of the Atlantic coastal area of Nicaragua. Dr. Danin spent several days at the Garden in July, using the herbarium facilities to familiarize himself with the tropical plants he will be collecting and studying in the field.

"In order to study the vegetation one has to know the plants," said Dr. Danin, who is on a sabbatical from Hebrew University. But instead of beginning in Nicaragua, where there are fewer trained botanical experts and less literature available on the subject, Dr. Danin came to the Garden to learn about the plants he will be researching and study the relevant literature. "The Missouri Botanical Garden is the finest source in the world to learn about the plants of Nicaragua," he said. "It is the research center of the world on tropical flora."

After completing field studies, Dr. Danin will continue his sabbatical at the University of California, Berkeley, in the forestry department. He was originally invited to use the Garden research facilities by Dr. Peter H. Raven, Garden director, two years ago, when Dr. Raven was a guest lecturer at Hebrew University.

The Gerhard Marcks sculpture, "Three Graces", is on loan to the Garden from Mr. and Mrs. Thomas S. Hall. The 42-inch high bronze sculpture has been placed within the small pool in the front of the Linnaean House.

Garden Visitors

Gerhardt Zimmermann, left, assistant conductor of the St. Louis Symphony Orchestra, conducts a Brahms work during a recent concert at the Garden. Zimmermann has termed the Garden "one of the most esthetically pleasing settings" in which the symphony performs. Below, the first of some 2,300 concertgoers arrive for the evening's performance.

The Shapleigh Fountain, itself in watery bloom, serves as a focal point during the recent Rose Evening for Members.

Dr. Peter H. Raven, Garden director, escorts members of the Society of American Travel Writers on a recent tour.

Ambassador Messanvi Kokou Keheh of Togoland and Mme. Keheh inspect the Japanese Garden's Oribe lantern during a tour conducted by Dr. Peter Goldblatt of the Botany Department. Mme. Keheh wears a "pagne", a native hand-printed cotton dress with a long skirt, matching blouse and tie sash.

On tour near the Main Gate are members of the American Society of Personnel Administration.

Robynn and Andy Srenco, children of Mr. and Mrs. Robert Srenco of St. Louis, find a restful spot to relax near the small stream which feeds one of the Japanese Garden waterfalls.

Waldemer Fountain is Bird Paradise

The Waldemer Fountain embodies birds in flight and is a popular spot for the Garden's bird population. But other Garden visitors — the wingless variety — also find it a pleasant stop during an afternoon tour.

It is no coincidence that the Garden's birds-in-residence approve of the Waldemer Fountain, located near the entrance to the Anne L. Lehmann Rose Garden and one of several water fountains in the Garden.

"The concept embodies birds in flight," explains Robert Lee Walker, the sculptor who carved the fountain from bronze and set it upon stones of Tennessee marble. Walker, in fact, had birds in mind when he designed the fountain.

The fountain was contributed to the Garden by Mr. and Mrs. Edwin R. Waldemer. Coordinating architects who worked with the sculptor were Karl D. Pettit III and Harriet Rodes Bakewell.

Walker, who has designed many fountains for private gardens and memorial bronze tablets, is the creator of the Iron Man statue of St. Louis Blues player Gary Unger; and the famous bronze statue of Popeye in Chester, Ill., the home of Popeye's originator, the late Elzie Segar. Walker is chairman of the art department at John Burroughs School and head of its sculpture section.

Plantings to complete the area of the fountain, which was installed in the spring of 1976, will include a circle of tall hollies.

The Ascent of Man

In keeping with its scientific heritage and ongoing cultural and educational commitment, the Garden has scheduled for Members a showing of the unique Jacob Bronowski film series, "The Ascent of Man".

Installments of the 13-part series will be shown at 10:30 a.m. and again at 8 p.m. every Wednesday, beginning Sept. 7, in the John S. Lehmann Building Auditorium.

Hardback and paperback books in the "Ascent of Man" series will be on sale at the Garden Gate Shop.

"The Ascent of Man" traces the development of man as seen through the history of science. Discoveries from the flint tool to geometry, from the arch to the theory of relativity, are shown to be progressions in man's search to understand nature and control it.

Dr. Bronowski, the author, approaches his subject with authority and grace. In the end, he gives us a new perspective not just on science, but on civilization itself. The schedule:

September 7	"Lower than the Angels"
September 14	"The Harvest of the Seasons"
September 21	"The Grain in the Stone"
September 28	"The Hidden Structure"
*October 5	"Music of the Spheres"
October 12	"The Starry Messenger"
October 19	"The Majestic Clockwork"
October 26	"The Drive for Power"
November 2	"The Ladder of Creation"
November 9	"World Within World"
November 16	"Knowledge of Certainty"
November 23	"Generation Upon Generation"
November 30	"The Long Childhood"

* This film will be shown only at 8 p.m. There will be no 10:30 a.m. presentation.

Tower Grove House Face Lift Complete

Tower Grove House has had its face lifted.

Under the supervision of Gerhardt Kramer, restoration architect, the stucco exterior of the house has been painted a soft beige hue and its wood trim green, the original color in the time of Henry Shaw.

Now Mr. Shaw's Italianate country home awaits visitors as one of the highlights of Historic Pilgrimage '77, a nine-day series of St. Louis tours scheduled for September 24 through October 2.

Until its refurbishing earlier this year, the stucco exterior was dulled and weak with age; the wood trim was brown.

"But upon investigation, scratching down to the bare surface, we found that the original trim was green, a typical St. Louis custom at the time the house was built," said Kramer. Since the 1849 house had been painted many times, it was no easy task to duplicate the original color.

The original house, according to Kramer, was brick, one small section of which remains, unpainted and unstuccoed, under the rear stairs. The stucco facing was added in 1918.

Added to the house in 1891, a wing on the north side replaced the old servants quarters. The original window trim there, including the cornices, was also found to be green.

"Ornamental eyebrows over the windows on the front of the house are wood on the original building and copper on the 1891 wing," said Kramer.

Tower Grove House is one of 26 museum houses which were added to private homes on the fall historic pilgrimage tour, sponsored by Landmarks Association of St. Louis, Inc., and the Missouri Historical Society.

Tower Grove House is the first stop of the series Tour No. 2, on Tuesday, September 27.

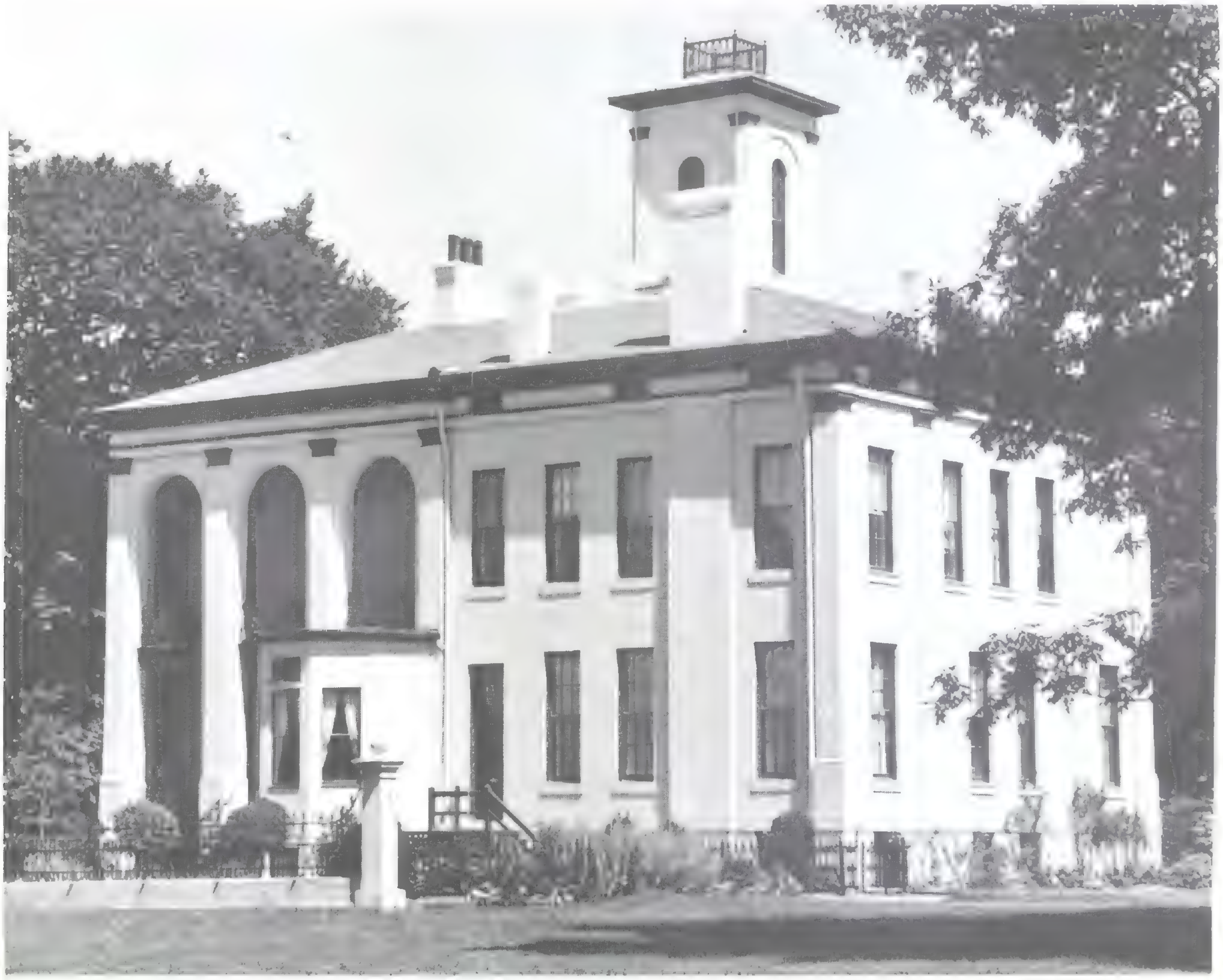
TOWER GROVE HOUSE TWILIGHT TOUR

On September 24, the opening day of the Landmarks tour, Tower Grove House will be open from 5 to 7 p.m. for a twilight tour.

Refreshments will be served to visitors.

Landmarks tour tickets will be on sale at Tower Grove House that evening and during the rest of the tour series at $5.00 each. Admission to the Shaw Home twilight hour is $2.50, $1.50 with a Pilgrimage ticket.

In time for the tour series, a special exhibit of buttons from a collection belonging to Mrs. William Henry Schield, a Garden Life Member, will be on display at Tower Grove House.



Tower Grove House following its recent face-lift, viewed from the south and including the fenced-in Herb Garden.

Gardening in St. Louis

September is the month for working lawns back into good condition. Refeed the lawn, thatch, aerate and reseed areas when and if needed. It is important to select good seed and to get it in as early in the month as possible, in order to take advantage of the cooler nights and, hopefully, moist weather. Feeding in early September, followed by another one in mid-October will insure an established turf as we enter the winter months.

Now is also the time to plan for the planting of trees and shrubs, to take place as soon as these become dormant late in October. Preparations need to be made for the site and for selection of the types. One may want to consider some of the smaller trees for attracting birds. *Cornus kousa* — Chinese dogwood is an excellent small shrub for this area, blooming later than the regular flowering dogwood so it is not affected by the late spring frost, and bearing heavy quantitites of fruit which turn brilliant red in the fall and last into early winter. The common Washington thorn, *Crataegus punctalia* 'Ohio Pioneer' is an excellent cultivar for the street tree or specimen planting, and is almost completely free of thorns. It is excellent bearing small tree growing a height of 25 feet.

ATTRACTING BIRDS

For attracting birds, the single flowered species of crabapples are best as far as fruiting habits are concerned. Among these are the Sargent crab, *Malus sargentii;* the cut-leafed crab, *Malus toringoides,* and redbud crab, *Malus x zumi* 'Calocarpa,' *Malus* 'Red Jade', a weeping form, which originated at the Brooklyn Botanic Garden, is an excellent weeping form for the small garden and it bears heavily.

Other good trees and shrubs to include are the Russian olive, *Elaeagnus angustifolia; Pyrancantha,* the firethorns; and *Cornus mas,* cornelian cherry. Other suitable trees for planting in St. Louis are the following: autumn purple white ash, *Fraxinus americana* 'Autumn Purple', Shawnee brave bald cypress, *Taxodium distichum* 'Shawnee Brave', the Hesse European ash, *Fraxinus excelsior* 'Hessei', Korean callery pear, *Pyrus calleryana* 'Fauriei', Aristocrat callery pear, *Pyrus calleryana* 'Aristocrat', white cascade flowering crabapple, *Malus* 'White Cascade', white candle flowering crabapple, *Malus* 'White Candle', and *Malus* 'Snow Drift'.

Trees that grow to 35 or 40 feet are 'Crimson king maple, *Acer platanoides* 'Crimson King', *Acer rubrum* 'Autumn Flame', autumn flame red maple, Regent Japanese pagoda tree, *Sophora japonica* 'Regent', little leaf linden tree, *Tilia cordata* 'Chancellor'.

Other cultivars are *Tilia cordata* 'Greenspire', and *Tilia tomentosa,* the silver linden.

These trees should be available through local garden centers and nurseries by late October, once heavy frosts have occurred. Trees should be planted by properly preparing the digging area, mulching and staking for winter protection.

REPLANTING PEONIES

This is an excellent time to replant peonies that have failed to bloom or have become very large. Roots should be dug, washed and cut into sections with four or five eyes. Place them back into ground which has been well prepared with superphosphate added. Other late summer flowering perennials may be divided at this time and mulched heavily for winter protection. Late summer flowering shrubs, such as the althaea and others, should be pruned to reshape and remove some of the older stalks.

House plants should be prepared for moving indoors. Clean, cut back, repot if needed and spray for insects and disease. The soil should be treated for insects with the use of pyrethrum and diazinon, watered into the soil. Move plants indoors gradually over a period of a week to ten days. Accomplish the move before the nights become too cool.

If attempting to flower poinsettias for Christmas, make sure the plants are in good growing condition and — about September 20 — place the plants in a dark area from 7 p.m. until 8 a.m. Bring them out into plenty of light during the day. It is important to continue this program daily until the plants show good color in the bracts.

Fall bulbs, such as tulips, daffodils, etc., should be purchased early this month. The ground should be prepared and planted in late September or early October for good bloom next spring, beds should be prepared by working in plenty of superphosphate, planting bulbs to required depth and lightly mulching the beds for winter protection.

— Robert J. Dingwall,
Chief Horticulturist

PLANTS ON SALE IN OCTOBER

The third annual Fall Plant Shop Sale will be held on Saturday and Sunday, Oct. 1 and 2, offering great savings to Members and the general public.

The largest selection of specimen and tropical plants to be assembled at one time, under one roof, will be found at this unique annual sale.

Plant Shop sale hours are 10 a.m. to 5 p.m. Musical entertainment will be provided and there will be attractions for children. The sale offers plantlovers a chance to purchase plants and plant aids at double the usual 10% Member's discount.

MINI-FLOWERS OF THE DESERT

Robert I. Gilbreath

The camera art of Robert I. Gilbreath – photographs of miniature flowers in full bloom but so tiny they are dwarfed by the head of a pin – will be on special display through September 25 in the lobby of the John S. Lehmann Building.

This remarkable display, "Unseen Flowers of the Desert," includes 57 full-color photographs of miniature plants which grow only in the desert and are so small that, according to Gilbreath, "few people have ever heard of them and fewer still have ever seen them."

Gilbreath, of Hillsborough, California, has travelled into the remote desert areas of the Western United States and Mexico to photograph the flowers, using the head of a seamstress' pin in each picture to indicate the almost microscopic size of the individual buds.

The mini-flowers are complete in every respect, says Gilbreath, and are fully as complicated as garden flowers, even to the insects which live in, feed upon and pollinate them. A retired rancher and industrialist, Gilbreath discovered the mini-flowers by accident.

"Because I had been travelling in, around and over the deserts for almost 50 years," he said, "I was asked by The Nature Conservancy to be a consultant to them on desert areas in which they might be interested. It was on a survey trip that I accidentally discovered my first mini-flower, and we have been looking for them ever since.

"We have driven more than 58,000 miles and accumulated 16 months in the deserts to find and photograph fewer than 100 separate species," he added.

The display, open to the public, will be on exhibit from 9 a.m. to 5 p.m., Monday through Friday.

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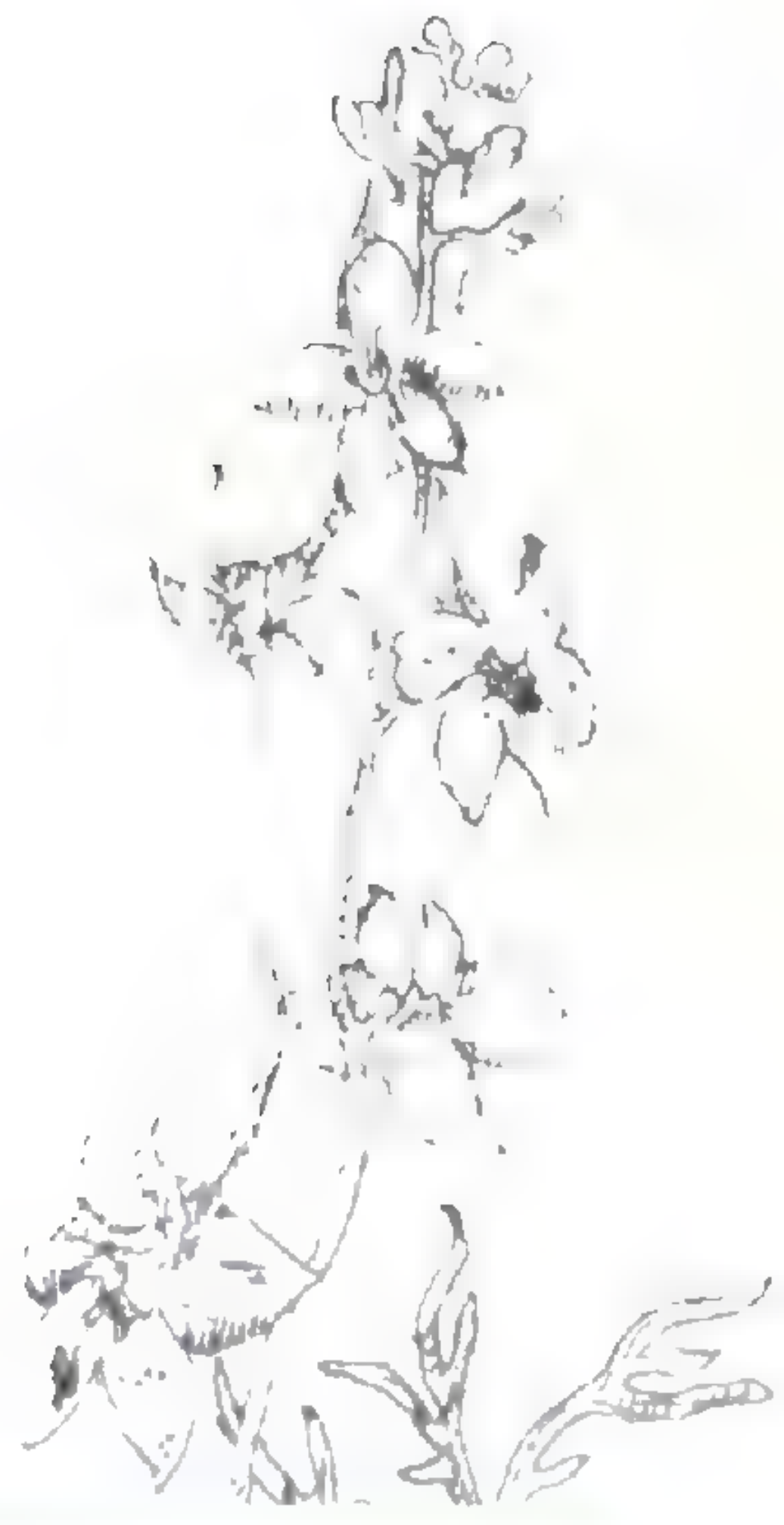


Trelease's Larkspur; see Page 9.

Garden Campaign Off and Running

Dr. William F. Symes, left, president of the Monsanto Fund, presents $250,000 contribution to Robert R. Hermann, chairman of the Garden's $6 million development drive.

Aided by major contributions from the Monsanto Fund and the Ralston Purina Trust Fund, the Garden's capital improvement campaign is well on its way toward achieving its $6 million goal.

The Monsanto Fund grant, totalling $250,000, is the largest contribution thus far committed to the campaign, launched August 3 to raise funds for outdoor improvements and major capital construction at the Garden. The Ralston Purina Trust Fund gift, $130,000, brought total receipts during the first month of the campaign to more than $1.5 million.

Meanwhile, Campaign Chairman Robert R. Hermann announced the successful enrollment of the campaign committee. Members include:

— Tom K. Smith, Jr., group vice president/operations staff and member of the Board of Directors of Monsanto, and a Garden Trustee, appointed advanced gifts chairman for the campaign;

— William R. Orthwein Jr., a director of McDonnell Douglas Corporation, president of McDonnell Douglas Automation Company and a Garden Trustee, appointed major gifts chairman;

— Clarence C. Barksdale, chairman and chief executive officer of First National Bank in St. Louis and a Garden Trustee, appointed major corporate co-chairman;

— Warren M. Shapleigh, president of Ralston Purina Company, and a Garden Trustee appointed major corporate co-chairman;

— A. Timon Primm III, vice president and general manager of the St. Louis *Post-Dispatch,* and a Garden Trustee, appointed general solicitation chairman;

— Daniel L. Schlafly, chairman of Arkansas Beverage Company and a Garden Trustee, appointed general corporate chairman.

The Monsanto Fund grant was announced jointly by Mr. Hermann and Dr. William F. Symes, president of the Fund, the philanthropic arm of Monsanto Company. The grant was made, Dr. Symes said, in the interest of "upgrading the cultural opportunities of St. Louis.

"We feel the Missouri Botanical Garden plays a vital and prominent role in the St. Louis area, and community support for this world-renowned institution is essential," added Dr. Symes. "Its research programs, dealing mainly with tropical plants, indirectly affect the lives of millions of people.

"Its effects on the neighborhood and on tourism in St. Louis are outstanding. Monsanto Fund is pleased and proud to be able to take part in such a worthwhile and unique activity."

J.P. Baird of the Ralston Purina Trust Fund, in announcing the Trust Fund grant, said, "We recognize the high community value of the Missouri Botanical Garden's programs and we are pleased to participate in its campaign.

"There are only a few cultural institutions that are as broad in scope, or as dedicated to high standards in education, research and display."

(Continued on Page 2)

Volume LXV Number 10
October 1977

CAMPAIGN OFF AND RUNNING . . .

(Continued from Page 1)

Another high point in the campaign has been the response of the Garden staff, which has pledged more than $18,000 to the fund-raising effort – an average gift of about $220 and more than twice the total contributed by employees during the 1969 drive.

"If (employee response) is any indication," said Dr. Peter H. Raven, Garden director, "we should have no problem reaching the $6 million goal."

H. E. Wuertenbaecher, Jr., vice president/Customer Service for Union Electric Company, a Garden Trustee and general chairman of the 1969 campaign, addressed the Garden staff when the employee drive was launched at an August 25 meeting.

"The general public believes the Missouri Botanical Garden is a great community asset," he said. "When it is demonstrated that the employees are in support of the campaign drive by making their own pledge, the general public cannot help but respond with supportive pledges.

"In a single week following that challenge, Garden employees provided their demonstration of support," said Dr. Raven.

The major goal of the campaign is a building to house the educational programs, visitor orientation facilities, and a new enlarged floral display hall. Other components include a building to house all of the Garden's support services, a new garden feature south of the education building, and expanded parking accommodations.

This is only the second capital campaign in the Garden's history. It was conceived as the final phase of a Master Plan, initiated in 1972, which has resulted in a near doubling of all activities.

During the past five years, the display houses have been renovated and the collections enlarged; the Anne L. Lehmann Rose Garden and the 14-acre Japanese Garden have been created; the Shoenberg and the Shapleigh Fountains have been constructed; and a start has been made on refurbishing and restoring the Garden's architectural treasures.

In the same period, attendance has doubled to more than 350,000 visitors annually, membership has climbed from 2,000 to more than 9,000 and the number taking part in the broad range of educational program has exceeded 40,000 annually.

Members—New Gate Procedure

Because of the recent installation of a new data control system at the main gate, Members must now pause to obtain a ticket. There is still no charge for Members, however. The purpose of this change is to assist us in gathering statistics, improving traffic flow, and providing information necessary to upgrade future programs. Please have patience while we perfect the new system.

A Rave Notice

The following letter has been reprinted with the permission of the author. It speaks for itself.

July 31, 1977

Dear Mr. Goudy,

Last year I had the great pleasure of experiencing with my nephew the family event at the Shaw Arboretum through the Pitzman Nature Program. As a teacher and a human being I was very much impressed by the experiences we had during the program. So much so that I became a Garden member – something that I had considered doing for a long time but had just not gotten around to doing. Any place and anyone who does something as fantastic as this has to be supported. Yes, I bought the ACC book and went to the Steve Van Matre workshop this spring. I am both personally and professionally interested.

Between last summer and this we have been frequent visitors, taking along various family members, friends, and groups with which I work. This summer I signed both my four-year-old niece and my ("Can we go back to the Arboretum again?") nephew for Pitzman Nature Programs – Sense of Wonder and Natural Awareness. *The kids and I are among the Missouri Botanical Gardens most enthusiastic boosters. Please, please continue and expand these programs for the benefit of the adults as well as the children. Do you have any idea what it is like to rediscover "magic" at the hardened, worrisome age of 29?*

One last thing before you put this down. I have some good things to say about your staff, especially of the Shaw Arboretum. They are kind, patient, and knowing people who are much appreciated by the children and adults in these programs. I would be doing them a disservice if their names were not included in this letter: Harold Grams, Tracy Goudy, Bob Rundquist (forgive me if I misspelled it, Bob), Bill and Kathy Davit, Gary (whose last name I wouldn't come close to doing justice) [Winzenburger] and especially John Katzel because through this summer my niece, Angela, and my nephew, Guy Robert, have come to regard him as much a part of the Shaw Arboretum as the elements, the plants, and the animals. He could understand our hugging that homely old pine by the Desert House every time we come to visit. Take good care of our tree, Mr. Goudy, until we get back to hug him.

Sincerely,

Wanda F. Kuni

Letters from Members are welcomed and will be reprinted as space permits.

St. Louis Firm Goes 'Delicate' To Construct Japanese Garden

Jim Casper, Professor Koichi Kawana and Karl Pettit III direct placement of rocks for Cho-on-Baku waterfall in Japanese Garden.

"We usually just excavate thousands of yards of dirt, lay a parking lot and we're done. But the Garden was much more delicate," said Jim Casper.

Jim is one of two sons of Harold Casper, the other being Timothy. The Caspers placed a bid and received a contract in November, 1974, to excavate the 4.5 acre lake which is now the center of the largest Japanese Garden in North America.

The new Garden occupies a 13.5 acre tract, has two waterfalls, four islands, pathways, bridges, and dry gardens. Professor Koichi Kawana, lecturer in environmental design and landscape architecture at UCLA, designed the Garden; Karl Pettit III of Eugene J. Mackey and Associates, St. Louis served as project manager.

But Harold Casper and Sons of 745 Regina Avenue in St. Louis, had to figure out how to build it.

No one in St. Louis had ever built a Japanese Garden before, and even though Casper and Sons worked closely with the designer, ingenious construction methods had to be devised. They admit that the construction demanded an understanding of the project and participation that is not usually required on a job. After the lake excavation, the Caspers were hired to continue working on the project.

"Because of the nature of the work, it is important to keep the same company once rapport and understanding are established," said Kawana.

"In the beginning it was a little difficult to understand what Kawana was after," admits Casper. "He would show us sketches of what it should look like or try to explain. It took us a while to understand his mind's eye and to get our thoughts coordinated, but it wasn't a problem for long."

"We have an excellent working relationship and can create something beautiful because of it," said Kawana on a recent visit.

Koichi Kawana was present for many of the major projects, but when he wasn't there they were built to his specifications and awaited his approval.

"Sometimes we were right and other times we had to redo it. He knew the effect he wanted and it was our job to figure out how to do it," said Jim. Casper cited the construction of the Rangui posts along the lake's edge as a typical example. "We knew what they should look like but had to figure out a way to put them there and keep them there. But as long as we got the visual result, we were successful."

"Casper and Sons is an interested firm. They think out problems in the field and have a sense of responsibility to the Garden. They also offered sound advice on how best to do the task," says Karl Pettit, the project manager.

The construction of the first waterfall was the most challenging project for Tim Casper. Kawana wanted a stream that turned into a three-tier waterfall

(Continued on Page 4)

JAPANESE GARDEN CONSTRUCTION . . .

that should remind the viewer of heaven. Each of the three stones weighed between 15 and 18 tons and had to be lowered and sometimes raised back up to fit the hillside.

"The placement had to be perfect because it affects the sound of the fall," said Tim Casper. "We knew what the finished fall should look like but we had to improvise ways of anchoring and cutting out the rocks. Many ways didn't work and we had to devise more ways," said Jim.

Finally, they constructed three concrete retaining walls six feet high and 18 feet long, and the big rocks were cemented to them in a way that makes an artificial structure look natural. They even threw handfuls of gravel onto wet concrete to give the base a natural look. "If people saw us they would have thought we had cracked up", said Casper.

A Japanese Garden is symbolic and the placement of everything is vital. Kawana insisted on certain things being in certain places so the viewer could see only part of something and had to move on to explore the rest.

The Garden has four islands; on one stands an authentic Japanese teahouse, a gift to the State of Missouri from the Nagano Prefecture of Japan, Missouri's sister state, which can be approached by a bridge. Tortoise Island and Crane Island are considered sacred and have no access. The Caspers had to place the islands properly. It was important for the viewer to see the head and back of a turtle when they viewed Tortoise Island. The pine trees on Crane Island look like crane wings when viewed from the second waterfall. Paradise Island is a 22-ton stone that required two highlifts for balance while being set in place and then mortared by stone masons.

The second waterfall, called Cho-on-Baku, is nearing completion and will be single-tiered to create a tidal sound. It will be more dramatic than the first. Again the stones must be placed perfectly to get the desired sound.

"A great deal of planning went into the Garden and many people don't understand the work," said Pettit. "The second waterfall is nearing completion and basically all we need are the plantings on Alfred Avenue and then just time for the Garden to grow; the plants need to get bigger, moss needs to grow on rocks and America needs to learn to understand a traditional Japanese Garden.

"The Japanese Garden will help knit a bond for worldly understanding and will give us a chance to understand another culture."

The MISSOURI BOTANICAL GARDEN BULLETIN is published 12 issues per year monthly by the Missouri Botanical Garden, 2345 Tower Grove Avenue, St. Louis, Mo. 63110. Second class postage paid at St. Louis, Mo. $5.00 per year. $6.00 foreign.

Accolades to the Garden Gate Shop

A study of sales figures of the Garden Gate Shop for the past two years, conducted by Stanley J. Goodman, has been concluded. The results, according to Mr. Goodman, reveal that "in the small space available, the sales are three times better than a good department store gift department and twice as good as a good gift shop in a shopping center."

Congratulations are in order for all involved. The buying committee is composed of the following: Margaret Baldwin (Mrs. E.S.); Sue Chalfant (Mrs. H.F.); Betty Freeman (Mrs. C.W.); Celeste Lipscomb (Mrs. J.D.); and Betty Sims (Mrs. W.A., Jr.)

Countless hours are given by this committee and the many devoted volunteers who staff the shop on a regular basis. Marilyn Svejkosky is the paid manager of the Garden Gate Shop.

Congratulations to all of you for the superb performance record.

NEW GIFT ITEMS

The buying committee has just returned from a very successful trip to New York. Plants were found to remain high priority items in the home decorating field with emphasis on natural containers of an informal nature. Oriental designs prevail on the formal side. Our Japanese Garden provides a timely focal point for the lovely oriental collection purchased, which includes cachepots, ashtrays, lamps, linens and many more lovely appointments.

Several holidays are approaching so keep in mind that the shop will feature delightful ceramic jack-o-lanterns and mosaic window hangings for Halloween. Also, mark your calendar for the annual Christmas Gift Preview, November 2 and 3.

Dr. Raven Receives Certificate of Merit

The Botanical Society of America selected Dr. Peter H. Raven, Garden director, as recipient of a Certificate of Merit. The society held its annual meeting at Michigan State University in East Lansing on August 24, 1977. The award reads as follows: "In recognition of distinguished achievement in and contributions to the advancement of Botanical Science. In recognition of his excellent contributions to angiosperm biogeography and to the systematics and general biology of the Onagraceace as well as his outstanding success in both teaching and administration."

Dr. Raven is a past president of the society. Other recipients of the Certificates of Merit were: Dr. Sherwin Carlquist, student of plants and animals of islands and of plant anatomy of the Rancho Santa Ana Botanic Garden, Claremont, California; and Dr. Rogers McVaugh, student of Mexican plants, of the University of Michigan.

Lotus Bed is Latest Feature

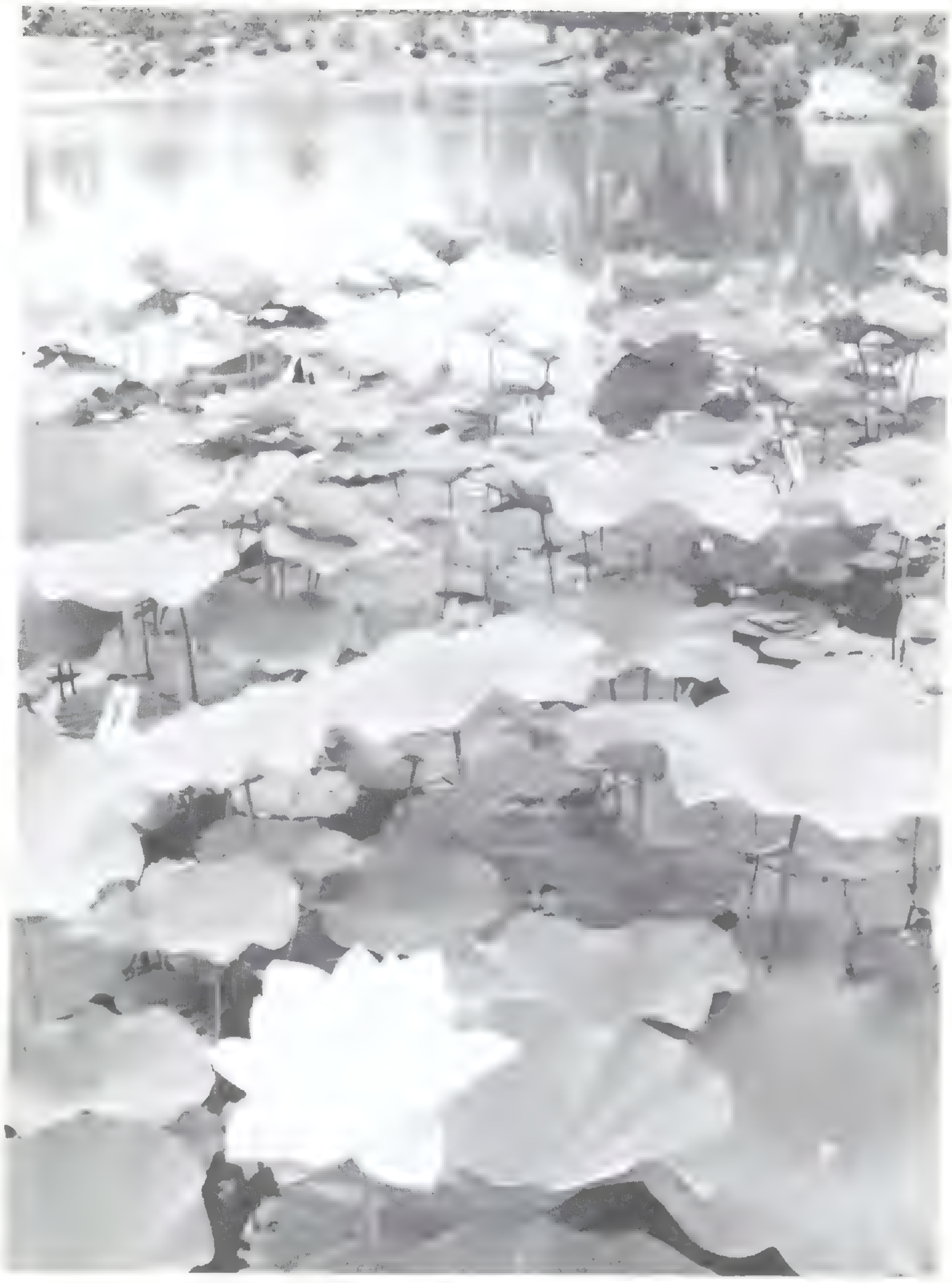
One of the latest features in the new Japanese Garden is the lotus garden, a planting of sixty lotus plants consisting of four varieties. Included are double large white, white with red edges, double and single pink. One variety is quite fragrant.

The lotus, according to Zen Buddhist philosophy, is a symbol of purity since it blossoms as a pure white (or pink) flower even when emerging from the mud.

The lotus bed was contributed to the Japanese Garden by four longtime members of the Garden: Dr. and Mrs. Allen B. Shopmaker and Mr. and Mrs. Donald J. Sher, in memory of another longstanding friend and former Life Member of the Garden, Hazel O. Wallach.

Mrs. Wallach was well-known for her Garden interests and activities. In addition, as a member of the University City School system for over a quarter of a century, she nurtured generations of students. Her husband, the late Jacob Wallach, also a Life Member of the Garden, was a Latin teacher at Beaumont High School in St. Louis.

It was through Mr. and Mrs. Wallach's interest and generosity that both the Shopmakers and the Shers were introduced to Shaw's Garden and were given Life Memberships. It is fitting recognition of Mrs. Wallach that the Garden she loved so much and persuaded so many others to love and support now contains in its latest outdoor development, the Japanese Garden, a lovely, symbolic growing feature in her memory.



Lotus flowers in the lotus garden, newest feature of the Japanese Garden.

Torch cactus, Cereus validus, *is one of the giant cacti on display in the Desert House. Mrs. Gene Jarvis, volunteer, gives perspective to the giant specimen.*

Giant Cacti of the Americas

From October 15 through November 13, the Garden will present an exhibit of over 30 giant cacti which are native to California, the West Indies and south to Argentina.

Among the plants on display will be saguros, senitas, totem-pole cacti, giant-clubs, organ-pipe cacti, old-men-of-the-mountain, torch-cacti, Peruvian apple cacti, Mexican giant barrels, golden barrels, and fishhook cacti.

Large specimens will be featured as they grow throughout the naturalistic setting of the Desert House, immediately south of the Climatron, while small, immature individual plants will be exhibited in the Lad Cutak memorial cases at the west end of the Desert House.

Written information focusing on historical and ecological aspects of these succulent giants will accompany the display.

Steinberg Touch Makes Arboretum Grow

The story of Frank Steinberg and the story of the Shaw Arboretum have been inextricably intertwined since 1927. The month of August marked the 50th anniversary of Frank's association with the Arboretum. He has been on the Arboretum staff since he came from a nearby farming community where he grew up. His intelligence and integrity have played an important role in the development of the Arboretum since its inception.

Frank Steinberg

When the Arboretum was first formed from five separate farms, consultants were brought in to develop a master plan and make recommendations. There was one serious flaw in the planned recommendations and that was that none of the staff or consultants was familiar with the Ozarks. Plans were drawn up with little knowledge of the violence and variability of the local climate, the problems of run-off after cloudbursts and the complex interrelationships of forest and grasslands. It was here that Frank used his farm-boy knowledge of the Gray Summit hills, fields and streams as well as his common sense. He came to understand in effect, what not to do.

Frank had watched the Meramec in full flood, bridges wash away, tile culverts destroyed, plantings perish. He used all of these experiences to help conserve and develop the beauty and scientific usefulness of the Arboretum.

The entire Steinberg family became involved in these efforts. Mrs. Steinberg helped maintain some of the plantings in addition to performing telephone duties. Vernon Steinberg, as a high school student during four summers, helped develop some of the unique trails. Gladys, the daughter, worked as a secretary to August Beilmann, an early superintendent of the Arboretum. Frank served as superintendent from the 1950s until 1970.

On August 23, the staff gave a surprise party to honor Frank for his 50 years of service. Tom K. Smith, President, wrote a letter on behalf of the Board of Trustees. It read, in part:

> *"Thanks to your talent and devotion the Shaw Arboretum is a superb example of Missouri's heritage and offers to the public an opportunity to view at its best the beauty and charm of nature. If Henry Shaw were alive today, he would rise and toast Frank Steinberg for fulfilling his dreams!"*

The Arboretum has indeed been fortunate to have the Steinbergs.

Fall Education Classes, Arboretum Events Scheduled

Two classes in plant propagation will be offered for the beginner. One course consists of four sessions beginning Thursday evening, October 6, from 7 to 8:30 p.m. The principles and techniques most needed for home horticulture will be emphasized.

The other plant propagation class is a one-day workshop on Tuesday, October 18, 10 a.m. to 3 p.m. Practical experience in taking and handling of cuttings will be gained by participants.

"Landscaping the Home Grounds," an introduction to the principles of effectively and suitably using plant materials to enhance the appearance of the home, will be offered in two sessions. One will be on Thursday afternoons, beginning October 6; the other will be Thursday evenings starting on the same dates and continuing for five sessions.

A workshop for teachers on the "Deserts of North America" will be given twice: October 24, 4:30 to 7 p.m. or November 1, 4:30 to 7:30 p.m. In addition to classroom instruction, the class will play a desert survival game and visit the Garden's Desert House. Please register in advance by calling the Education Department.

The "Autumn Wildflower Walks" at Shaw Arboretum continue through October. There is no charge other than Arboretum admission.

The exciting new program "Natural Awareness for Adults" will be offered at the Arboretum Saturday and Sunday, October 1 and 2. The "touch of nature" approach will enable you to gain a closer contact with the natural world. Your sensory perceptions will be sharpened and you will develop a personal relationship with the out-of-doors. Though an overnight camping experience is involved, this is not the strenuous approach.

For information and reservations, please call 772-7600, extension 81.

Winners in the recent Henry Shaw Cactus Society Show display their trophies, from left, Jules Campbell, show judge; Betty Demzik, first place; Dorothy Weitz, second; Sophie Becker, third.

A group of Japanese young people, the Eighth Delegation of Experimentors, visit the Garden for luncheon and a tour. After a month's travel in the United States, the group returns to Japan to serve as ambassadors promoting understanding between the two cultures.

Annual Fall Show

Mark your calendars for the Annual Fall Show which begins October 22 and continues through November 13.

Members are invited to attend the preview of the Fall Extravaganza Flower Show on Friday evening, October 21 from 5:00 to 7:30 p.m., in the Floral Display House. The party is being sponsored by The Shop for Pappagallo and will feature informal modeling, music by Larry Mantese and refreshments.

The show will feature single stem mums in white, yellow, bronze and pink in several flowering types. There will be baskets and cascading mums providing riots of color. Don't miss the Fall Extravaganza!

The Fall Show has been made possible through the assistance of the Missouri Arts Council.

Joni Duggins, left, special events, portrays a visitor from outer space for a Garden education session, the "Green Machine Experience."

The Herbarium and Library: What a Grant Can Do

Recognizing the great national and international importance of the collections contained in the Garden's Herbarium and Library, the National Science Foundation in 1972 awarded a grant to help support these collections.

The purpose of the grant, which was awarded for the period 1 May 1972 through 30 April 1977 and totalled over $680,000, was to improve the condition of the collections, make them more readily available to scientists who use them in their research, and help support the growth of the collections by providing aid for processing newly-acquired collections.

At the start of the grant period the collections were still in the process of being moved from the overcrowded, antiquated quarters which they had occupied since 1908 in the Administration Building, to the newly-completed John S. Lehmann Building. At that time the Herbarium collections amounted to more than 2.1 million plants mounted and stored in the cabinets, but there was a backlog of more than 150,000 unmounted plants in dead storage. Furthermore, the few plants which were being mounted at that time were not being properly stored, since the cabinets in the Administration Building were full and could hold no additional material. Plants were being stored in cardboard boxes piled high atop the metal cabinets. Manpower supporting the herbarium collections amounted to six people.

The grant allowed the Garden to hire several new plant mounters, new technicians to help file and retrieve plants, and two new curators and a plant identifier to help in the large task of identifying a backlog of undetermined material. During the period of the grant all of the backlog was mounted and filed in the collection. Thus these plants, many of which had been unavailable for many years, are now available for study by the Garden's scientists and others. A measure of the tremendous activity in the Herbarium during this five-year period is reflected in some of the statistics which were compiled during that time. The number of plants mounted during the grant period was about 339,000; an additional 20,000 were repaired. Nearly 320,000 new acquisitions were made during this period, consisting of 86,000 purchases, 119,000 exchanges received, 43,000 gifts, and 70,000 staff collections. The figures for purchases and staff collections do not include duplicates, thus the total number of new plants coming into the Herbarium is well over half a million. The duplicates are used in the exchange program to receive additional new material. Most of the 43,000 gifts were received in exchange for the Garden's scientific staff returning determinations to the collectors. This is one of the important services which we provide to scientists around the country and around the world who need to know the names of the plants which they are studying.

Nearly 1,000 visitors came to St. Louis to use the Herbarium collections, more than 100 of these from foreign countries. Another way the collection is used is through lending specimens to other institutions. During the grant period, more than 85,000 specimens were loaned, 68,000 of these going to institutions in the United States and 17,000 to foreign institutions. These 85,000 specimens were sent out in 850 separate shipments, of which 300 were sent for graduate student study. The awarding of this grant benefited the research staff here at the Garden, by making the collections more readily available for their study. However, the grant did not directly support any research. It supported the resources which are necessary for the kinds of research which we do. It is also important to point out that the grant greatly benefited researchers around the country and around the world, as indicated in the statistics concerning loans and visitors mentioned above. The Garden is the caretaker of a tremendous scientific resource, and has the responsibility to make this resource available to all qualified researchers. Recognizing the need to keep these specimens, many of which were collected on National Science Foundation research grants, available to the scientific community, the National Science Foundation has generously supplemented the Garden's own support of the collections.

The Library at the Garden, itself an internationally known collection, also benefited from the grant. Many of the older journals in the Library had never been case bound, and because of this had greatly deteriorated through years of use. The grant provided funds to have many of these older journals bound for the first time and to have others repaired.

We are now happy to announce that this program of support by the National Science Foundation has been extended for an additional three years, at the level of approximately $150,000 per year. This continued support assures that we will be able to continue to mount newly acquired material, thus making it quickly available to our own and other scientists.

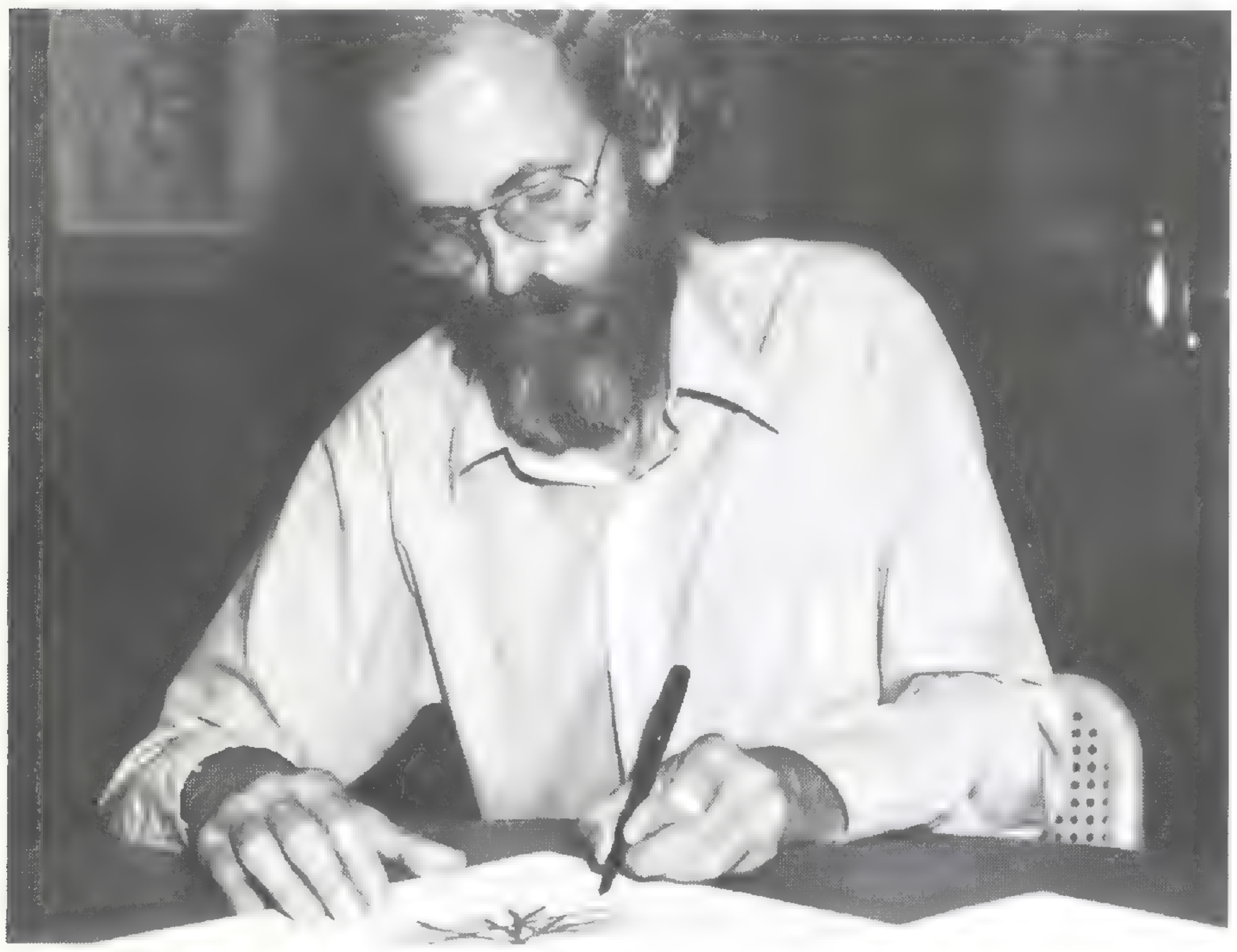
Volunteer Contribution

The time, effort, and devotion of our many faithful volunteers cannot be represented by a mere counting of hours. However, the time spent does reflect an impressive total. For example, from January 1 through June 30, 1977, 6,777 hours were logged in horticulture, 5,076 in Garden Gate Shop and Tower Grove House, 3,353 in Herbarium and Library. The grand total of 22,021 hours for the period, amassed by volunteers working in almost all areas of the Garden and Arboretum, is an impressive total.

This time and effort could not be replaced in any way. Our thanks to all.

Trelease's Larkspur

Noted botanical illustrator Keith West has executed a drawing of Trelease's Larkspur. A limited number of prints are on sale at the Garden Gate Shop, and limited edition prints signed and numbered by the artist are to be given as special gifts to all new Henry Shaw Associates.



Keith West

Keith West was at the Garden collaborating with Tamra Raven and Peter Raven, Garden director, on a research project. He is, in addition, illustrator of the Ravens' book, *The Genus Epilobium (Onagraceac) in Australasia: a systemic and evolutionary study.* West is staff artist for the Department of Scientific and Industrial Research in Christchurch, New Zealand.

During his visit to the Garden, West, Dr. Paul Redfearn, (botanist from Southeast Missouri State University), Arthur Christ (noted local amateur botanist), and David Goudy (director of Public Services at the Garden) spent several days in the southwestern part of the state locating specimens of this plant. West spent time sketching on the site, and several specimens were brought back with the permission of the Department of Conservation, for further study. After completing the drawings, West supervised the printing to be certain that color tones were correct. Trelease's Larkspur is of importance for a number of reasons: this attractive perennial was named after the first director of the Garden following Henry Shaw, William Trelease; the growing range is limited to southwestern Missouri and adjacent Arkansas; and though not officially listed as endangered either nationally or in Missouri, it is rare and should be protected. One in ten of the plants of the continental United States is at least as rare and local as Trelease's Larkspur, and only continued vigilance will save them for future generations to study and enjoy.

Dr. Raven is active in international circles regarding the global problem of endangered species and especially the role of botanical gardens in addressing this problem. The issue of the prints here at the Garden emphasizes this role.

'Ascent of Man' Film Series Continues

The films are being shown at 10:30 a.m. and 8:00 p.m. in the auditorium of the Lehmann Building as follows:

October 5	Music of the Spheres
Note: there will be no 10:30 a.m. showing of the film.	
October 12	The Starry Messenger
October 19	The Majestic Clockwork
October 26	The Drive for Power
November 2	The Ladder of Creation
November 9	World Within World
November 16	Knowledge or Certainty
November 23	Generation Upon Generation
November 30	The Long Childhood

The book *Ascent of Man,* by Jacob Bronowski, is available in the hardback edition for $17.50 and in paperback for $8.95 in the Garden Gate Shop.

Elizabeth Kirkbride

Elizabeth U. Kirkbride, longtime friend of the Garden and a Garden volunteer, died on Sunday, July 24, 1977. She had played many roles in her years of service at Shaw's Garden, including a period of service as president of the Women's Association of the Garden. Upon her retirement from that position in 1961, she was presented with a new hybrid orchid named in her honor.

Among her many other activities, she was president of the Ladue Garden Club and later chairman of the Historical Committee of Tower Grove House.

Mrs. Jerome F. Kircher came to know Mrs. Kirkbride during the construction of the Climatron and she subsequently was involved with the fund-raising campaign for the Lehmann Building. Mrs. Kircher said of Mrs. Kirkbride: "Anything she could do to help the Garden, she was always willing and able." Dr. Hugh Cutler said that she and her husband were involved and most helpful in the restoration of the Museum.

Mrs. Kirkbride is survived by a son, Roger Kirkbride; a sister, Mrs. Ralph E. Johnston; a brother, William Upthegrove; and two grandchildren, all of the St. Louis area.

October should be a very busy month for the gardener, with many chores to be done before the winter weather sets in. The work done now will reap benefits next spring. This is a good time to thoroughly clean the garden by removing any weed growth. This can be removed and placed in the compost pile, which should now be started fresh with a good coarse layer of material at the bottom of about one foot, followed with about one foot of fine material, alternating back and forth. After each layer is placed on top and firmed in, it should be well watered so it is thoroughly moist. Place some old compost on each layer to introduce the bacteria which will hasten the decay.

The vegetable garden should now begin to pay off as far as late planting is concerned. With the cooler weather, many vegetables will now be maturing and will add greatly to the menu. The earlier vegetables, which have now finished, should be carefully removed, areas dug over, plenty of organic matter added, and ground left rough to over-winter. Ground thoroughly prepared now, with a good mulch piled over top, will provide an ideal area for planting next spring. The first crops should go in sometime during the month of February or early March at the latest.

INSECT CONTROL

Check the garden regularly for insect control, as aphids can be active in cooler weather, particularly among members of the cabbage family. Occasional sprayings will be needed to keep these under control. Also, be on the alert for slugs.

Lawns which were seeded early last month will benefit by another feeding of 12-12-12 fertilizer during the second or third week of October. Using fertilizer at this time will help to get grass established. Also lawns should be cut at regular intervals, removing one-third of the growth each time they are cut. Mowers can now be set down to one and one-half to two inches. Leaves will be falling rapidly and should be raked off the lawn to prevent accumulation. If the leaves are run over with the mower they can be raked up and placed in the compost pile where they will begin to decompose fairly rapidly. Lawn areas which were seeded in early September can now have herbicide applied in the middle of the month, if perennial weeds are a problem. It is best to use 2-4-D with Silvex to bring these under control. Apply the herbicide as recommended on the container early in the day when there is little or no wind to avoid drifting onto other plants. Seeding in thin areas can still be done provided the soil is lightly worked up; broadcast seed uniformly over the bare areas; and apply a balanced fertilizer. Rake the two in together and keep moderately moist for good germination.

CARE OF PERENNIALS

Most perennials can now have their tops cut back to within two to three inches from the top of the ground, organic matter worked in around them and the garden heavily mulched if need be. This is also an excellent time to plant spring bulbs – tulips, daffodils and others. Put them in while the ground can still be worked, planting several inches over the top of the bulbs. Plant the bulbs in masses for the best effect in the garden next spring. Do not delay planting after the end of this month as weather cannot be guaranteed for good gardening work.

Home greenhouses should now be thoroughly checked to make sure that all air cooling units are turned off and thoroughly drained or cleaned to be ready for next spring. Glass should be checked to make sure that it is firmly in place, recalking if needed, and shading removed so the plants have as much light as possible.

Bulbs for forcing such as tulips and daffodils and others should be potted as early this month as possible and placed in cold frames or in pits outdoors for the cooling period. These need eight to 10 weeks of temperatures of about 40° for forcing and no attempt should be made to force bulbs before the first of January. Some of the true lilies can also be potted, placed out in the frame for good rooting and then forced at a later date. In selecting bulbs for forcing, buy the top size. Price should not be a factor. The larger the bulbs the more sure you are of better flowering. Some of the seeds which can be started in the greenhouse now are the following: hyacinth flowered candytuff, *Calendula,* fibrous root begonias, larkspur, winter-flowering snapdragons, stocks, *Cineraria, Calceolaria* and *Salpiglossis.* Many of these make excellent cut flowers and add color to the corner in the greenhouse or for flower arranging during the winter months. Make sure all other plants are thoroughly cleaned at this time and any spraying or fumigating is done now, while good ventilation can be maintained. It is difficult to control many of these things once the greenhouse is closed up for the winter.

CAMELLIA PLANTS

Camellia plants can be left outdoors until the weather gets really cool. Normally, in this area, they do not need to be brought in much before early November. Temperatures down a few degrees below freezing will not hurt them. The cooler they are kept, the better they will bloom. Make sure all pots are free of insects. It is sometimes advisable to tip the plant out of the pot and very carefully spray the soil ball to rid it of any insects.

If growing poinsettias in the greenhouse for Christmas flowering, make sure they get no artificial light at night, covering them with black cloth or black plastic from six o'clock at night until eight o'clock in the morning.

Cuttings can still be taken of many of the other plants in the garden, if not successful earlier. Cuttings taken from healthy plants, rooted in a mixture of peat and perlite develop roots in three to four weeks and make ideal plants early in the new year. Many plants, if leggy, should be cut back heavily at this time, withholding water somewhat, and avoid feeding until they are back into active growth.

This is an excellent month to think of Christmas gift giving. Dish gardens, desert gardens and terrariums make welcome gifts and look much nicer when planted well ahead of time.

Late this month trees and shrubs can be planted as they are nearly dormant. Evergreens can be planted as soon as they can be dug. Fall is an ideal time to get many of these planted. When planting make sure soil is well prepared and plants are heavily mulched after planting and given a good watering.

— Robert J. Dingwall
Chief Horticulturist

Systematics Symposium

The twenty-fourth annual Systematics Symposium will be held at the Garden October 14 and 15. This year the botanical presentations will be devoted to African biology. It is appropriate that one of the annual symposia be devoted to this topic, since the Garden is the repository in North America for African plants and has recently been actively involved in research in African botany.

Distinguished scientists will be attending from all over the world. At 8 p.m. on Saturday, October 15, Dr. Clark Howell, University of California, Berkeley, will discuss Plio/Pleistocene hominids and their paleoenvironmental settings in Africa.

The lecture will take place in Graham Chapel at Washington University and is open to the public.

Garden Part of Proposed Network

The Garden has been selected as one of 67 proposed sites which would form a network for the pursuit of ecological research. The spectrum of Experimental Ecological Reserves (EER), as the sites are titled, includes wilderness areas, parks, arboreta, and university biological stations in 28 states, Puerto Rico and the Virgin Islands. The sites were carefully chosen to represent examples of all ecosystems so that these areas can be preserved.

The study on the "Experimental Ecological Reserves", a reflection of a decade of thought, has been supported by a grant from the National Science Foundation. The network of field sites would improve the ability of scientists to learn how various ecosystems function. Since man is an integral part of the environment and dependent upon managed ecosystems for sustenance, this study would help scientists to better understand the complex interacting ecosystems.

Special Back Issues of Bulletin

Four *Bulletin* issues of historical interest are now available for sale at the Garden Gate Shop. The dates of publication range from 1954-1967. The copies will sell for fifty cents each, and are available while supplies last.

Titles include: "Growing Exhibition Chrysanthemums at Home", "Lawn Establishment and Care", "Bromeliads", and "Thirty-one Broad-Leaved Evergreens for the Central Midwest".

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In Honor of Mr. and Mrs. Joseph Scalise's Anniversary
Mr./Mrs. Ellis C. Littmann

In Honor of Mrs. Julius S. Schweich's Birthday
Mr./Mrs. Harold S. Cook

In Honor of Mr. and Mrs. Harland R. Speer's 50th Anniversary
Mr./Mrs. H. J. Kipp

In Memory of Thor W. Bruce
Dr./Mrs. James R. Wiant

In Memory of Dr. Archie D. Carr
Mrs. Lloyd C. Stark
Mr./Mrs. H. Wuertenbaecher, Jr.

In Memory of Mrs. Hannah Chosid
Ed and Gloria Hogbin

In Memory of Mrs. Nan DeCamp
Helen and Andy Payne

In Memory of Leone C. Gale, Jr.
Elaine and John Henkle

In Memory of Ralph W. Hallquist
Dorothy Brown
Corrinne Hallquist

In Memory of Ralph C. Hancock
Mr./Mrs. A. F. Boettcher, Jr.

In Memory of Mrs. L. Hoagland
Mr./Mrs. S. Bennett

In Memory of Mr. Leonard Holden
Mr./Mrs. Ellis C. Littmann

In Memory of Mr. G. Alex Hope
Rose Society of Greater St. Louis

In Memory of Mr. Ralph Huebenthel
Rose Society of Greater St. Louis

In Memory of Mrs. C. L. Keaton
Bess J. Corn

In Memory of William J. Keim
Dudley and May Titus

In Memory of Mrs. W. Warren Kirkbride
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In Memory of Norah J. Taylor
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MISSOURI BOTANICAL GARDEN BULLETIN
2345 Tower Grove Avenue
Saint Louis, Missouri 63110

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Garden
Bulletin

Gifts for holiday giving, Pages 7-9.

New Center to be 'Crystal Palace'

On October 18, the Garden Board of Trustees announced design plans for the new $4.7 million Visitor Orientation/Education Center, a "crystal palace" which will house classrooms, workshops, floral display hall, an auditorium, restaurant, plant-gift shops and entrance facilities for Garden visitors.

The building, the principal goal of the Garden's current $6 million development campaign, will anchor the "new north end" of the Garden grounds. It is part of the final phase of the Garden's 1973 Master Plan for expansion and improvement.

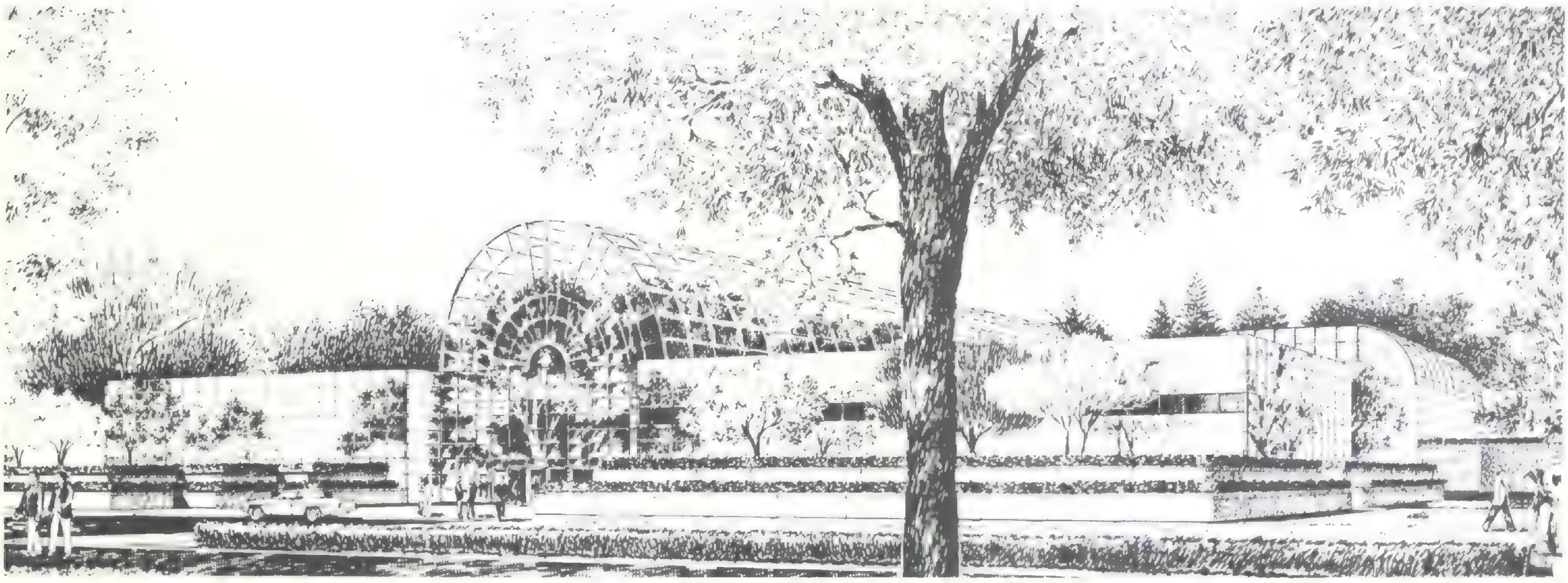
That plan, formulated by Environmental Planning and Design of Pittsburgh, Pa., concluded that the present Garden entrance was not adequate, that parking was not available near by and that the Climatron-Lily Pool axis was not ideal for proper visitor orientation.

EPD's recommendation at the time was that the Garden's north end should be completely redeveloped—the overall goal of the capital improvement campaign launched last August 3.

The central feature of the redevelopment will be the Visitor Orientation/Education Center, designed by Gyo Obata of Hellmuth Obata & Kassabaum, Inc., of St. Louis. The new building will provide an appropriate entry for visitors, with convenient adjacent parking. Displays and exhibits will provide background information of an ecological and botanical nature to make a Garden visit more meaningful.

Formal education facilities will include a large auditorium, classrooms, workshops, teacher resource center and expanded staff offices and work areas. Evening adult continuing education classes can be expanded because of parking facilities and night lighting.

(Continued on Page 2)



Volume LXV Number 11
November 1977

New Center to be 'Crystal Palace'

(Continued from Page 1)

The new Center will house in addition a large, climate controlled floral display hall, restaurant, plant and gift sales, gallery and exhibit space. Administrative office space will be provided as well.

The chief objective in designing the new Center was to create a new northern gateway to the Garden, replacing the existing Tower Grove portico and providing a visible and inviting entry to the garden, according to Mr. Obata, the designer. The design of the building evolves around a symbolic arched entrance, developed as a broad, public atrium and roofed by a barrel vaulted skylight. The atrium becomes not only the main circulation concourse, but also serves as a showcase for exhibits and displays which represent the history, purpose and philosophy of the Garden, Mr. Obata said.

The building is developed on two levels, oriented around the concourse and connected by escalators. The lower level houses an educational wing, 300-seat auditorium, gift and plant shop, and floral display hall. The second floor accommodates the main entry, dining area, display space and office wing.

The exterior materials are a combination of translucent and opaque glass—reflecting the garden atmosphere and relating to the John S. Lehmann Building, Mr. Obata explained.

"The design of the new Center is evocative of the Victorian era English Crystal Palace and the modern reflective Lehmann building," he said. "The building will provide an inviting entry with exciting interior spaces which will serve as a showcase for exhibits and displays which represent the history, purpose and philosophy of the Garden."

Besides the new center, the capital improvement drive will provide funding for a new maintenance operations center and expanded parking facilities located near to the "crystal palace."

"We realize that we are seeking a considerable sum—$6 million—in a highly competitive market," said Robert R. Hermann, general campaign chairman. "But we are confident because our institution is unique and our goals not only well-identified and exciting, but also realistic."

Two major new grants have been pledged to the campaign, Mr. Hermann said, reflecting the wide community support that the drive is generating.

The St. Louis Clearing House—its members including The Boatmen's National Bank of St. Louis, First National Bank in St. Louis, Manufacturers Bank & Trust Company and Mercantile Trust Company—has announced a pledge of $125,000 to the campaign.

In addition, the Emerson Electric Company Charitable Trust has donated $150,000 toward the $6 million goal.

"We are most grateful for these tangible expressions of support for the Garden's work and its position as an unparalleled cultural asset for the St. Louis area," said Mr. Hermann.

Kent A. Guske, Garden director of development, announced that campaign receipts so far—during only the first two months of the drive—have totalled $1.8 million.

Garden Visited by 'Father of Peruvian Botany'

Dr. Ramón Ferreyra is familiarly known as the father of Peruvian botany, a title that seems appropriate to his vital personality. He is director of the Museum of Natural History, a branch of the University of San Marcos in Lima, and is professor of botany at that institution. The University is the oldest in the Americas, founded in 1551, and it remains a center for the education of young botanists.

Dr. Ferreyra was in this country recently to attend meetings in Florida and to visit several botanical institutions in pursuit of his field of interest—including the Garden. The Compositae family is his field of study, and he is working with the Garden botany department on publishing the Flora of Peru. Dr. Ferreyra has one of the best collections of Compositae in Latin America, having botanized the entire flora of Peru. The Garden, in cooperation with the Field Museum in Chicago, is pursuing a program of collecting in Peru. The end result of the program between the two institutions, with the collaboration of Dr. Ferreyra and other Peruvian botanists, will be to publish the Flora of Peru. This is a project which was begun by the Field Museum previously, but has been reactivated. The Field Museum and the Garden are the centers of Peruvian Botany in this country.

Calendars at Gift Shop

Calendars produced by the local Sierra Club Chapter are now being sold by the Garden Gate Shop. The calendars feature photographs of Ozark wilderness areas.

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Freund Center is Garden's Rustic Residence

Adlyne Freund Education Center in rustic setting at Arboretum.

The Adlyne Freund Education Center, as well as the 220-acre tract of land on which it is located, was dedicated in ceremonies held outdoors on a bright fall morning in September—adding great educational potential to the programs offered by the Garden and the Shaw Arboretum.

Mrs. Adlyne Freund, whose generosity made this acquisition possible was honored at the ceremonies. Speakers were: Dr. Peter H. Raven, Garden director; C. C. Johnson Spink, chairman, Arboretum Committee, Board of Trustees; Dr. William Klein, director, Morris Arboretum, Philadelphia, Pennsylvania; Robert Chandler, superintendent, Jefferson National Expansion Memorial, National Park Service; Fred Lafser, director, Division of Parks and Recreation, Missouri Department of Natural Resources.

"The acquisition and dedication of this property is important for a number of reasons," said Dr. Raven. "It will greatly extend the range of educational programs offered to the public by the Arboretum; it adds nearly a mile of protected river frontage to the lower Meramec corridor; and it is an example of strong cooperation on behalf of our national resources from both the private and public sector."

With the Garden providing private funds for this project, the State of Missouri was able to assist by providing federal matching funds to pay the Garden for a conservation easement on the property. The Garden agreed by deed restriction to prohibit any development of the property which would be detrimental to its essential natural features—meaning that the citizens of Missouri are assured that the natural state of the property will be maintained in perpetuity.

An important and substantial grant needed to complete the acquisition was provided by Mrs. Freund, a longtime friend and supporter of the Garden. The common note struck by all the speakers was the thanks and gratitude of not only this generation, but those to come for preserving such a magnificent tract of land and the rustic lodge.

The interior of the Freund Center, a "mountain lodge" atmosphere for Garden educational programs

The Garden Library

No one who knows the Garden well would be surprised to discover that the library's most extensive collections of manuscripts are the papers of Henry Shaw and those of his scientific advisor, Dr. George Engelmann. But while the papers of these two people constitute the bulk of the Garden's manuscript collections, they contain many other choice items of potential interest to scientists and historians. Even a casual examination of the correspondence files in the Garden's archives can reveal such treasures as Charles Darwin's 1846 autograph letter on fossil plants (donated to the Garden by Dr. and Mrs. Robert H. Duemler); an 1893 letter from John Burroughs, the famous nature writer, fretting over the condition of his fruit crops; a series of letters written between 1829 and 1834 by William Cobbett, a noted English journalist, agriculturist, and horticultural writer; and countless other letters and documents by individuals who have contributed to the development of botany and horticulture.

Most recently, an interesting series of letters from 19th century French and German botanists has been acquired through a generous gift of Mr. and Mrs. C. C. Johnson Spink.

The library has been offered an opportunity to obtain a few more choice items which would further strengthen its historical collections. The first of these is an autograph letter by Sir Joseph Banks, dated September 22, 1779 in which he discusses specimens of British ferns. Banks (1742-1820) was a zoologist, botanist, explorer, colleague of Captain James Cook, scientific advisor to King George III, a Fellow of the Royal Society, a Trustee and patron of the British Museum, and a friend and patron to many of the greatest English scientists of his time.

The second item the library has been offered is the manuscript contract for the 1807 edition of Philip Miller's *Gardener's Dictionary*, signed by Thomas Martyn (the editor of that edition), and by the four partners in the firm that published the *Dictionary*. Philip Miller (1691-1771) was an English apothecary and botanist who directed the Chelsea Physic Garden from 1722-1770. Miller's *Gardener's Dictionary* was among the most important botanical publications of its time, appearing in twenty-five editions and translations during his lifetime, and in further editions after his death. The acquisition of this publisher's contract will serve to strengthen the Garden's small collection of materials on the history of botanical and horticultural publishing.

A manuscript letter from Edward Tuckerman (1817-1886) to Captain Charles Wilkes (1798-1877) dated November 7, 1848, is the third item that has been offered for sale. In the letter Tuckerman discusses plants collected on the United States Exploring Expedition undertaken between 1838 and 1842. This expedition, planned as a continuation of Lewis and Clark's exploration of the Pacific Coast more than three decades earlier, was the first strictly scientific expedition to be funded by the federal government. Tuckerman, although not a participant in the Expedition, served as a consultant to Wilkes, and wrote accounts of the lichens and mosses collected by Wilkes and his party.

The total cost of these materials is $480. Donors are solicited for all or part of the purchase price. Interested persons are invited to contact Dr. Peter H. Raven, director, or James Reed, head librarian.

The Computer Age

Since 1970, the library has been involved in a project to recatalog the nearly 180,000 books, journals, pamphlets and unbound separates which comprise its magnificent research collections. These materials are being reclassified to a system based upon that used by the Library of Congress. Completion of this project, which is presently supported in large measure through the generosity of the Sunnen Foundation, will make our library's cataloging system compatible with that used by many of the nation's other major research libraries.

As part of this effort, our library will soon be joining the Ohio College Library Center (OCLC), a nationwide computerized cataloging network sharing a common bibliographic data base. The Garden's participation in the OCLC network will serve to speed our recataloging project considerably, as well as serving to make our library's resources more readily available to other OCLC participants.

To make our recataloging project useful not only to those who travel to the Garden, but to researchers throughout the globe, we are also participating in the National Union Catalog Project (NUC) maintained by the Library of Congress since 1901. Libraries report records of their holdings to Washington, where they are placed in a central file which is eventually published in book form. In effect, the Library of Congress is providing a record of the locations of all important research publications in all of America's major libraries.

This joint effort of the Library of Congress, the American Library Association, Mansell Information/Publishing Company, and the nation's important libraries has resulted in the publication, since 1968, of more than 450 volumes of NUC records in book form. By the time the project is completed, about 700 volumes will have been published.

The Garden's library has been subscribing to this invaluable set for several years, and has obtained about 275 volumes of the 450 so far published. Donors are now being sought to assist the library in acquiring the additional volumes. Each $35.00 contribution will buy an additional volume to bring our set completely up to date. Volumes acquired through donation will receive a special bookplate acknowledging the donor. Completion of this set will serve not only to assist our recataloging effort but will also provide us with information concerning the research holdings of several hundred other national research libraries, and thus assist us in obtaining materials through inter-library loan channels. Those interested in donating toward this project are invited to contact Dr. Raven or Mr. Reed.

Once recataloging has been completed — our present projected completion date is 1982 — the library will have, for the first time in its history, a comprehensive record of every published item in its collections. Use of the library will be greatly facilitated, as researchers will be able to search the catalog under all possible authors, titles, or subjects, instead of only through authors' names as is the case at present.

Kathy McKinney, catalog room worker at the Garden library

DECISIONS, DECISIONS! A family conference precedes purchase at the annual Plant Sale.

Teacher Training Project Enters Second Year

For the second consecutive year, city teachers participating in the Environmental Education Training Project have ended their summer vacations early to receive training at the Garden. The Environmental Education Training Project is a cooperative program which began in July, 1976, between the St. Louis Public Schools and the Missouri Botanical Garden. The goals of the project are to develop a model for training teachers in environmental education and to write a training guide for use in other school systems, state education departments, and institutions of high learning throughout the country.

Originally funded for one year, the project has been extended a second year through a $43,407 grant from the U.S. Office of Environmental Education to the St. Louis Public Schools. During the first year of the project, 19 city teachers were trained in the principles and concepts of environmental education, curriculum development, and effective ways to use community resources in the classroom. Representatives of over 25 civic, cultural, environmental, educational and governmental organizations and agencies have been participating in the training project.

This year, the teachers who participated last year will conduct training programs open to all city teachers in the middle grades. They will be assisted by Project Managers Peggy Rustige of the St. Louis Public Schools and Calla Smorodin of the Garden's Ecological Services Department. The teachers will lead workshops on methods for integrating environmental education into several curriculum disciplines and ways to make more efficient use of the community as a learning laboratory for students.

During the coming year, the project managers will continue writing the training guide, a task began this summer. "We are extremely grateful," says Mrs. Rustige, "that the Office of Environmental Education has given us the opportunity to continue the project for a second year. In a time when federal dollars for environmental education are limited, the extended grant is a vote of confidence in our work."

Project managers feel that they have also received a vote of confidence from fellow environmental educators around the country. During the past year, the project staff has been invited to make presentations about their work at the annual meetings of several professional organizations. Project co-director Ed Ortleb, Science Supervisor for the St. Louis Public Schools, made a presentation to the National Science Teachers Association held in Cincinnati, Ohio last March. Project managers Smorodin and Rustige presented papers in April at the National Association for Environmental Education meetings in Estes Park, Colorado and at the Missouri Academy of Science meetings in St. Louis.

Most recently, the project managers were invited to present a paper at the Conservation Education Association's International Conference held in Superior, Wisconsin in August. Ms. Smorodin believes, "these invitations and the response of those who have attended our presentations indicate to me that we are succeeding in being able to work out a training program for teachers which capitalizes on the expertise available outside formal educational settings. Wherever I go, people are very interested to find out how a botanical garden, working with an urban school system, can play a significant role in training teachers to offer more environmental education activities to their students."

Peggy Rustige, left, project manager for the Garden/Public School teacher training program, videotapes city teachers conducting environmental education workshop.

Give the Garden

With the holiday season fast approaching, we'd like to make a gift suggestion . . . Give the Garden.

When you give this perfect gift, you enrich yourself, for you are supporting an institution you believe to be important; you enrich the recipient, because you are making a gift of beauty to someone you hold dear; and that person gets an entire year of aesthetic pleasures . . . visits to the Garden, Arboretum, the lectures and parties; use of the library; the monthly *Bulletin;* discounts on gifts, trips, and courses—all the benefits of Membership that you already enjoy.

The Garden benefits too, with a new Member and some extra financial help to carry on its numerous research, preservation, and educational activities.

There is another advantage to giving the Garden: you avoid shopping in crowded stores, wrapping gifts, waiting until the last minute. Simply fill out the Garden Holiday Gift Tag below and mail to our Membership Office. We will include a gift certificate for a small plant for each person on your list (there will be an extra one waiting for you at the Plant Shop, too). Even people who "have everything" may not have a Membership in the Garden. You can solve your gift problems and increase your support of the Garden (tax-deductible, of course) all at the same time.

Please fill in your order on the coupon below, clip and mail.

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Name ________________________________
Address ________________________________
City ________________________________
State ______________________ Zip ________

Your name ________________________________
Address ________________________________
City ________________________________
State ______________________ Zip ________

I am ordering ________ gift Memberships at a cost of ________ each.

☐ Enclosed is my check (payable to Missouri Botanical Garden)

☐ Please charge this to my Master Charge
#________________

☐ Please bill me

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MEMBERSHIP CATEGORIES:

Regular
$25.00
- Free Admission to the Garden, Tower Grove House, and Shaw Arboretum (for two adults and children under 21)
- Subscription to the Missouri Botanical Garden *Bulletin* (monthly)
- Discount in Garden Gate Shop and Plant Shop
- Invitations to all special events, preview parties and lecture series
- Advance registration and special discounts on all courses in the Continuing Education Program
- Use of horticulture reference library
- Travel opportunities, domestic and abroad

Contributing
$50.00 ALL OF THE ABOVE PLUS
- Invitations to two exclusive receptions preceding floral display previews

Sustaining
$100.00 ALL OF THE ABOVE PLUS
- Free gate admission passes for 8 guests
- Eight free passes for the Flower Wagon

Sponsoring
$250.00 ALL OF THE ABOVE PLUS
- A $10 gift certificate from the Plant Shop
- A book on Missouri Wildflowers

Director's Associate
$500.00 ALL OF THE ABOVE PLUS
- A $10 gift certificate from the Garden Gate Shop
- A book on houseplant care

Henry Shaw Associate
$1000.00 ALL OF THE ABOVE PLUS
- A full color limited edition print of Trelease's Larkspur, *Delphinium treleasei,* signed and numbered by the artist, Keith West.

Special Print Sale

A special sale of botanical prints by the California print maker Henry Evans will take place in the library from November 1 through December 9. A limited number of these botanical linoleum block prints are for sale, at prices ranging from $17.50 to $55.00 each. Each print is mattted and ready for framing. The prints may be seen in the library between 9 a.m. and 5 p.m., Monday through Friday.

Garden Gate Shop . . . A Holida

The Garden Gate Shop, in preparation for the 1977 holiday season, has again stacked its shelves with some of the most unique and attractive gift items available in the St. Louis area—from stocking stuffers to botanical books to delicate Japanese ceramics.

The shop's volunteer buyers have become world travelers in their search for unusual and garden-related gift items. The result is a gift selection which makes the Garden Gate Shop a veritable shopping center for the upcoming Christmas season.

Among the shop's most popular items are those in a line of delicate Japanese-motif ceramics, including vases, pots, saucers, cups, trays, match boxes and table sculptures. Other unusual items include pots for planting, baskets for hanging, colorful pillows, home decorative pieces and aprons in gingham and other colorful patterns.

Garden Members receive a 10 percent discount on all items purchased at the Garden Gate Shop, which is open for buying or browsing from 10 a.m. to 4 p.m. seven days a week.

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Cornell

Books on botany and other subjects are available in a wide selection at

Colorful ceramics, many of Japanese design and decoration, are available as ornamentals or as very practical containers for houseplants. Items on hand in a wide variety of size and price range include saucers, plates, cups, trays, vases, match boxes, bird sculptures and decorative wall pieces

Shopping Center

Gate Shop.

Cards, Posters At Garden Gate Shop

Christmas greeting cards depicting the Japanese Garden in a snow scene will be available through November at the Garden Gate Shop. Etching-screened in full color, the cards are sold 25 to a box for $4.50.

Also available for the Christmas season are full color posters, suitable for framing, of several Garden scenes—the Japanese Garden, Rose Garden, Arboretum and others.

ctions of holiday gifting: an attractive wall mirror decorated otanical motif.

Pots for planting and baskets for hanging and other Garden items are in abundance at the Garden Gate Shop as gift ideas for the holidays

More than 200 visitors, streaming through the Garden Gate and past the Lily Ponds, toured the Garden during the recent Pow Wow of the Discover America Travel Organization.

Specimen Dahlias, botanical sunbursts, were among the exhibits at the Garden's Dahlia Show.

Chris Everson astride the Great Pumpkin, a winning entry at the Fall Harvest Show held in September in the Floral Display House.

Dr. Crosby Named Research Director

Dr. Marshall R. Crosby, chairman of the Garden's Department of Botany since 1974, has been named director of research, it was announced by Dr. Peter H. Raven, Garden director. Dr. Crosby is a specialist in the systematics of mosses and has recently published a book on the subject.

Many facets of the research branch of the Garden were discussed by Dr. Crosby during a recent interview. The major function of the staff of 11 Ph.D. scientists is original research conducted in the field and the herbarium. This research seeks a clearer understanding of plants, their interrelationships and their distribution. Knowledge of the basic nature of plants is critical to man's survival because man is part of a very fragile ecosystem with complex interrelationships. His survival depends upon the understanding of such relationships which research can supply.

There are 20 or so technicians in the herbarium who provide support for staff scientists, visiting scientists and others around the world. The mounting of herbarium specimens provides a resource for research. Field work contributes to the collection, and gifts supplement it. All specimens must be identified—another important function of the herbarium. Loans are made to scientists and students worldwide, enabling the Garden to perform a service and facilitate research at other institutions.

The Garden has two field stations, located in Panama and in Nicaragua, which broaden its outreach. Many requests are filled for seeds, soil and wood samples from these geographical areas. Through the basic thrust of the Garden's research efforts focus on the tropics, requests are received for local material indigenous to this area of the country.

The second major responsibility of Dr. Crosby in his new role is the Garden library, itself a research tool. Though plants are the primary source of information, the library is the repository for the results of research. Scientific papers reporting on research projects are recorded in books and journal articles. Such work is thus preserved and serves as background for further research.

The library is service oriented to a greater extent than the herbarium. It is one of the best in the world and as such, receives many loan requests. Photocopies of the requested information are sent rather than the actual books, placing the needed information in the users' hands quickly, reducing risk of book loss, and keeping books at the Garden for staff use. Many non-scientific queries are handled daily as well.

The library serves as an archive for materials other than books. Photographs, prints, newspapers, page proofs of early books and news clippings are among the items that are cataloged and preserved.

"I look forward to the continuing challenge of maintaining the high level of excellence that has earned the Missouri Botanical Garden its unique reputation in the scientific world," said Dr. Crosby.

Dr. Marshall R. Crosby

Tour Guide Program

Coordinators of the Garden's Tour Guide Program are, top row, from left, Sally Davidson and Maurita Stueck; bottom row, Nan Day, Isabel Morris and Harriot Smith

The month of September marked the end of a two year term as chairman of the guide program for Maurita Stueck (Mrs. C. F. P.). She was succeeded by Sally Davidson (Mrs. John). The chairman is responsible for coordinating the scheduling for all of the guided tours for the year. In addition, she designs all of the training programs for the guides working on these monthly training sessions with Ken Peck, head of the education department.

Tours of the following are available: The Japanese Garden, Library-Herbarium, English Woodland Garden, Climatron, Tropical Rain Forest, Mediterranean House, Comparative Tour, Missouri Tree Walk, General and Historical Tours.

These tours have been conducted for many groups from all over this country as well as for foreign visitors. School groups from the third grade through college level have been given tours. Tours may be arranged for any weekday, Saturday morning (there is a public tour each Saturday at 10:30 a.m. for individuals) and at other times for special groups. In the past six months, 55 volunteer guides have given nearly 1,700 tours. Prospective guides are given an intensive ten-week training before becoming tour guides.

The purpose of this valuable program is: 1) to introduce visitors to the Garden, its function, historical importance; 2) to provide beyond-the-classroom experience for students; 3) to identify the Garden as a community learning resource.

Guides are therefore an important segment of the educational program of the Garden.

STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION (ACT OF AUGUST 12, 1970 SECTION 3685, TITLE 39 UNITED STATES CODE)

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10 Extent and nature of circulation

		Average no. copies each issue during preceding 12 months	Actual no. copies of single issue published nearest to filing date
A.	Total no copies printed (Net Press Run)	10,000	12,280
B	Paid Circulation		
	1 Sales through dealers and carriers street vendors and counter sales	none	none
	2 Mail subscriptions	9,000	9,370
C	Total paid circulation	9,000	9,370
D	Free distribution by mail, carrier or other means samples, complimentary and other free copies	750	783
E.	Total distribution	9,750	10,153
F	Copies not distributed		
	1 Office use, left-over, unaccounted spoiled after printing	250	2,127
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G	Total (Sum of E & F1 —should equal net press run shown in A)	10,000	12,280

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(Signed) Barbara B Pesch, Editor
Publications Department

Flora of Panama

The Garden's long term research project, the Flora of Panama, has entered its final stages. Its completion, expected in 1979, will be greatly aided by a new grant from the National Science Foundation. This grant is for $170,600, and the project is under the direction of Dr. William G. D'Arcy. The primary goal is to produce a published Flora of the Republic of Panama, including the Canal Zone, thus nearly 70% of the grant award will go toward helping meet publication costs of the final portions of the Flora.

This project traces its origins to 1926, when the Garden founded a tropical station in the Canal Zone. The main function of this station was, initially, to care for a large collection of tropical orchids which the Garden had acquired from a resident of the Canal Zone. Serious botanical exploration of Panama was begun by the Garden staff in 1935, and a series of "Contributions toward a flora of Panama" was begun in the Garden's *Annals* in 1937. This series was replaced by the formal Flora of Panama series in the *Annals* in 1943. National Science Foundation support of the project dates from 1956, and by the end of the project, total support from the National Science Foundation to the Garden for the project will amount to more than $750,000.

During the early phases of the project, collecting activities were carried out in Panama in order to accumulate material upon which to base the written Flora. However, from the early 1940's through the early 1960's, very little collecting was done. Since the mid 1960's, continual collecting has been carried out by Garden staff. This collecting activity has greatly increased our knowledge of Panama's plants and greatly increased the number of species of plants known from Panama. For example, the number of species known from the coffee family, Rubiaceae, has increased from 290 in 1973 to 375 now. This is an increase of nearly 30% in the number of species known from Panama in only three years. Since many of the early volumes of the published Flora were based on small samples of plants, these contributions do not accurately reflect the great diversity of plant life found in Panama. After the completion of the formal, published Flora, the Garden hopes to continue its exploratory activities in Panama. Many of the early volumes of the Flora will be revised by various specialists in the years to come.

The Garden now owns a permanent residence in the Canal Zone, where a full-time Garden staff member resides. This staff member functions as a full-time plant collector, and much of our recently increased knowledge of the plants of Panama is based upon the collections made by this collector during the past few years. Collecting activity is concentrated in previously poorly explored areas of Panama, and many novelties continue to be discovered.

While the primary goal of the project is, of course, to produce a comprehensive treatment of the plants of Panama, there have been many other good results of the project. For example, the residence in the Canal Zone provides a convenient and economical place for visiting botanists, who often want to spend only a few days doing specific field work in Panama, to stay. Though our plant collector is basically involved in general collecting of herbarium specimens, many requests for specific kinds of plants—for example, material preserved for cytological or anatomical studies or material for chemical studies—have been filled by our collector. The project has also served as a stimulus for several doctoral dissertations which involved detailed studies of various plant families in Panama.

To commemorate the completion of the project, the Garden will jointly sponsor with the Universidad de Panama an international symposium to be held in Panama City. The topic of this symposium will be the "Botany and Natural History of Panama," and contributors from many parts of Central and South America are expected to participate.

"Ascent of Man" Film Series Concludes

The films are being shown at 10:30 a.m. and 8:00 p.m. in the auditorium of the Lehmann Building as follows:

November 2	"The Ladder of Creation" (Theory of Evolution)
November 9	"World Within World" (Atomic Energy)
November 16	"Knowledge of Certainty" (Science and Humanism)
November 23	"Generation Upon Generation" (Genetics)
November 30	"The Long Childhood" (The Future)

Special thanks to Ken Peck of the Education Department and Garden volunteer Jack Horner for operating the film projector.

Answerman Training

The Answerman service begins the first of its 14 winter training sessions on November 7. This year's series will be taught in conjunction with the University of Missouri Extension Service. The classes are open to all those interested in becoming a Garden Answerman. For further information and registration call Randal Anderson, 772-7600, Ext. 33.

NOVEMBER GARDENING

November is the month that signals the end of outside garden chores and, with memories of the severe cold of last year, necessary steps must now be taken to prepare plants for winter. Increased rainfall has induced better root systems this year. However, plants which have not been heavily mulched should now receive the necessary mulch. Apply to a depth of four to six inches around the base, working out beyond the actual planting area on new plants, and just beyond the drip line of established plants. Azaleas and other plants which are susceptible to winter burn can be protected by placing a burlap barrier around them. Place near the plants and fasten on sturdy stakes, leaving six inches between base of burlap and ground level to allow air to circulate underneath and high enough that the tops of the plants are not affected by the sun during the winter months. The burlap will keep the sun and wind away from the plants.

ROSE CARE

Roses should, by mid-month, be hilled up with six to eight inches of good top soil mixed with equal amounts of organic matter or compost. At a later date add two to three inches of wood chips. Do not remove soil from around the base of the plants as this will expose the roots.

Prune back long ends which may break in the wind. Plants which are not heavily pruned in the fall will overwinter much better and losses will be kept to a minimum. There is still time to work in superphosphate in many areas, particularly around the vegetable garden which should have extra organic matter added to it as well. The garden can be left rough and let the action of the freezing and thawing, wind and snow, break down the soil to a better tilth.

Superphosphate worked in around the roses, prior to planting, will also assure a better root system. A light application can be worked in around the base of the shrubs and this is also an excellent month for coming in with a balanced fertilizer in late November to root feed trees and shrubs which have not had this done for the past couple of years. The ideal method, of course, is to go out one-third of the way from the trunk to the drip line, making a series of holes about 18 inches apart and 10 to 12 inches deep, continuing the holes out to the drip line; then, in each hole add a handful of balanced fertilizer, leaving the holes open to allow moisture and air to enter. As the fertilizer breaks down, plants will continue absorbing it until the soil freezes.

PLANT STAKING

Plants that have been staked, or need staking, should be checked to make sure the stakes are securely in the ground and that plant ties are not too tight so as to bind on the plant itself. Use a soft material such as cloth or rubber hose, which will prevent the wire from tearing into the bark and injuring the plant. Old ties should be checked to make sure they are not too tight or to see that they have not loosened over this past growing season. Check plants along the foundation of the buildings, particularly where overhangs prevent adequate watering. These areas should be watered heavily so the soil is moistened to a good depth as these will continue to dry out during the winter months. Mulching is also advisable around foundation plants to control moisture and temperature.

FALL BULBS

Fall bulbs should be placed in the ground as quickly as possible. These cannot be carried through until next spring and planted as they will be of no value. Should you not be able to get out planting, it is advisable to apply a heavy mulch over the area to keep the ground from freezing and then remove the mulch at a later date and plant the bulbs. No bulbs should be left out of ground after the first of January if they are expected to bloom successfully next spring.

LAWNS AND LEAVES

Continue to mow lawns as long as the grass is growing and see that leaves are kept raked off the grass. All this material is ideal to go into the fast rising compost pile for use next year. As the compost pile is being built up, continue to soak it down at regular intervals, and after each heavy layer of material, sprinkle some top soil or old compost to induce bacteria into the pile. Liming and fertilizer are not necessary in the compost at this time.

Home greenhouses should be carefully checked to make sure that all fittings are tight, that there is no loose glass, benches are thoroughly clean, and there is no sign of insects. Necessary sprayings or fumigating should be done while the greenhouse can still be well ventilated. Plants in the greenhouse should be in excellent condition and ventilation carefully watched as temperatures fluctuate. Night temperatures of 50-55 degrees will help to keep the heating bills down and plants in a vigorous condition. Shading that was used during the summer or early fall days should be removed so plants get as much light as possible. It may be advisable to cover the north wall of the greenhouse with plastic, leaving about two inches between the glass and the plastic itself as an insulating barrier. Cuttings placed in the greenhouse earlier from outdoor plants should now be rooted. Pot in suitable containers for continued growth. Plants should be carefully watched to avoid overwatering. Do not use fertilizer unless plants are growing very actively, and then only lightly to keep the plants in good condition. Overfeeding can cause weak growth. It is important for both home greenhouse and indoor plants to have a good supply of potting media on hand while it can still be obtained. Materials should be carefully stored in areas where they are not being kept wet and cannot become contaminated with disease or insects. All insecticides and fungicides should be stored where they are not subject to freezing temperatures. Good storage areas are where temperatures vary between 45 to 65 degrees.

HOUSE PLANTS

House plants should be carefully inspected this month to make sure that insects are under complete control. Spraying can still be done on mild days outdoors and the plants can be left until very dry before bringing them inside. As the light diminishes, watering should be withheld on most plants indoors as moisture will not be evaporating as rapidly. Fertilizing should be kept to a minimum and only flowering plants fertilized to keep them in good condition. Foliage plants should be allowed to go into the normal resting period.

—Robert J. Dingwall
Chief Horticulturist

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Merry Christmas

Holiday gifts that keep on growing, Pages 6-7.

Treaty With Nature

A BOTANIST'S REPORT FROM PANAMA

Dr. Thomas B. Croat, associate curator at the Garden, backpacks into the jungle to collect specimens of Panamanian plants.

The jet plane touches the ground in Tocumen Airport in Panama and the warm tropical air lays a finger on his cheek. The botanist from St. Louis, here to collect plants for the Garden, is in reality collecting for the world. He is much more than a plant collector and may well have numerous scientific pursuits while in the Republic. Sophisticated though he may be, he may not realize how many areas of science his efforts touch and how far across the globe his studies may reach.

The botanist has no problems with Panamanian Customs; for one thing most of his collecting gear is tucked away in a trailer belonging to the Garden, maintained in the Canal Zone by a staff member for the more-than-occasional-visiting botanist. As the taxi transports him in the direction of Panama City, the soft rustle of the light-swept roadside grasses reminds him of his mission. He muses about the rare species he has collected or will collect on Cerro Jefe, a low mountain only an hour's ride from the airport. Thoughts of the rain forests of the highlands or Chiriqui, besprinkled with orchids, aroids, and bromeliads, or of the roadless swamplands of Darien, rich in rare species and inhabited by the Cuna and Choco Indians, flash across his mind. The taxi emerges from the semi-darkness into the well-lighted streets of Panama City. He is less than 10 minutes from the mighty Panama Canal. As he passes the campus of Panama University, with its formidable array of modern buildings, the myriad lights of the classrooms stand as a reminder that thousands of students can only earn degrees by studying at night and working by day. He recalls that there is in one building a rapidly burgeoning herbarium of dried plants from Panama. The Curator of the herbarium is Mireya Correa A., a Panamanian botanist who received her master's degree in systematic botany from Duke University and for a time studied in the herbarium of the Missouri Botanical Garden. She is ably assisted in the herbarium by Senor Alberto Taylor and Senor N. Escobar. Many Americans, including some from the Garden, have contributed their collections without thought of politics or monetary reward. While political forces are at work in all human endeavors, the traditions of science have established operational procedures whereby non-sensitive information can be pooled freely. A good example is the long-standing cooperation between the Garden and the Republic of Panama.

(Continued on Page 2)

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December 1977

A BOTANIST'S REPORT

(Continued from Page 1)

The Garden has the largest collection of herbarium specimens from Panama of any institution in the world. A rough estimate is that the compactors of the John S. Lehmann Building of the Garden, a treasury of two and one-half million sheets of dried plants, has a tenth of a million from the Isthmus. Dr. Thomas Croat, associate curator of the Garden and an authority on the vegetation of the man-made Barro Colorado Island in the heart of Gatun Lake in the Canal, has collected more specimens of plants (24,000 numbers to be multiplied by about four to include the duplicates found under each number) than any one of the 300 collectors who have botanized on the Isthmus. Collecting began in 1701, the year James Wallace collected the first herbarium specimen in the ill-fated Scotch colony in Darien. Since 1960, more than 50 botanists from the Garden, including numerous graduate students, have collected plants here, the specimens being distributed to more than 80 herbaria around the world. The Garden (and other prominent institutions, like the Smithsonian Institution which maintains an active biological research program in Panama, Florida State University, Duke University, the University of Panama, etc.) has sown the seeds of the vegetation of the Republic so to speak, in the herbarium cases of the world.

Some people are surprised to learn that the easiest, most practical, and most workable way of inventorying and sampling the vegetation of the world is through an herbarium. Like Alfred Lord Tennyson's brook, generations of people may come and go but the dried specimens go on forever, provided they are kept free of insects, mold, and properly curated. Often these inert lifeless specimens supply the most vital answers to problems in horticulture, agriculture, pharmacology, and ecology. One would be remiss in not acknowledging the importance of the Garden's library in supporting the herbarium as well as the role of the living collections.

The Garden entered Panama in post World-War I days through the doorway of horticulture. The fine collections of orchids seen today at the Garden are a reflection of yesteryear. In the early 1920's, several years after the opening of the Panama Canal (1914), a young Kew-trained horticulturist on the staff of the Garden, George Pring, encountered Charles Powell, a retired postman living in the Canal Zone. The latter, an amateur orchidologist, had so filled his home with living orchids that space became a serious problem. In a spirit of generosity Powell offered these to the Garden. To care for them and to provide a supply line for the greenhouses in St. Louis, the Garden established a Tropical Station in Ancon, in the Canal Zone. This flourished until the Station became a victim of the great depression.

The Rio Dos Bocas in Panama, altitude 450 meters, flows through the region where Garden-sponsored collecting has been carried out for decades

George Pring was also world famous for his breeding of water lilies. He provided the writer with the biggest surprise experienced on his first trip to Panama in 1959. On visiting Summit Garden in the Canal Zone, a jewel of an outdoor horticultural display, the writer was astonished at how much the water lilies in the pool resembled those growing in the pools of the Garden in St. Louis, some 3,000 miles away. They should have! For the hybrids were created in St. Louis and subsequently planted in the Canal Zone!

The Tropical Station closed its doors in the Canal Zone, but it had served to open another area of interest in Panama—the systematic collection of Panamanian plants for permanent deposit in the Garden's herbarium. These dried specimens served as the foundation for the grand floristic survey of the Isthmus being published, plant family by plant family, as the Flora of Panama, the first fascicle of which appeared in the *Annals* in 1943. This vast inventory of the species of seed plants, financed by the National Science Foundation, is currently nearing completion under the guidance of Dr. William D'Arcy of the Garden's staff. Every genus of plant is illustrated and the descriptions of species and plates amount to more than 7,000 pages. It is the most comprehensive flora in Central America. Through its pages the vegetation of Panama is made available to the world.

In a day when a new treaty between the United States and Panama is being proposed and political maneuvering is reaching a fever pitch, the Garden and its botanical and scientific friends in Panama can proceed in cooperative effort in the usual productive way. They have walked a roadway clear of political entanglements. They have a common bond in the vegetation and from a scientific viewpoint the vegetation belongs to everyone. Our botanical friend who stepped from the plane has no worries.

—John D. Dwyer

River Basin Report Completed

The Ecological Services Department has completed a report on the major biological issues on the Mississippi River for the Upper Mississippi River Basin Commission. The Commission, which is comprised of 10 federal agencies and the governors of six states, has been authorized by Congress to develop a comprehensive management plan for the Mississippi River. The Mississippi River from the mouth of the Ohio River at Cairo, Illinois, north to the Twin Cities has been divided into three sections. The Garden's section covers the area from Cairo, Illinois, north to Saverton, Missouri, about 10 miles south of Hannibal.

Twenty-six biological concerns were described in the report, including such topics as the amount of remaining natural habitat, floral and faunal diversity and ecosystem stability. In some areas, up to 95 percent of the natural vegetation has been removed for agriculture. If the trend continues, numerous plants and animals could be eliminated from the area. There are more than 300 vascular plant species in the area, about 100 fishes, and more than 400 amphibians, reptiles, birds, and mammals.

The report was written by Rick Daley and is a synthesis of published and unpublished data. In addition to the information collected during the Garden's 1974 study of the Mississippi River floodplain vegetation, information and ideas were obtained from state and federal agencies, such as the Illinois and Missouri departments of conservation, the Corps of Engineers, the U. S. Fish and Wildlife Service, and the Coalition for the Environment. Those issues which could be clarified or resolved by further research were of special interest, since the report will be a major factor in determining research programs during the next few years as the Commission develops its comprehensive planning recommendations.

Annual Drive Launched In November

The Garden's annual solicitation drive, held each year to provide funding for general Garden support and support for specific programs, was launched in November with a mail campaign directed at Members and Garden friends.

The goal for this year's campaign, a fund-raising effort separate from the ongoing development and capital improvement drive, has been set at $21,000.

Members are encouraged to include the Garden in their holiday and year-end giving plans.

Poinsettias Headline Christmas Show

Poinsettias in all shades of red, hot pink, pink-white and white, and numbering 4,500 specimens will be the main feature of the Christmas Show this year. In addition, there will be poinsettia baskets and some novelty varieties. Azaleas; begonias, including cascading varieties; kalanchoes; and Jerusalem cherries all will add splashes of color to the Floral Display House. A special feature will be Christmas cacti in baskets and on frames in the shape of Christmas trees.

Visit the Garden to view the Christmas show between 9 a.m. and 5 p.m., December 10 through January 9. The show has been made possible through the assistance of the Missouri Arts Council.

Garden Members and their families are invited to a preview of the Poinsettia Show and an evening of festivities for children of all ages. On Friday, December 9, from 5 to 7:30 p.m. in the Floral Display House, Santa Claus and Merlin of the Mind with his magic tricks will make a special trip to the Garden. There will be something special for each child, including a chance to win a door prize.

The Garden gratefully acknowledges Sears, Roebuck and Company for making this family event possible.

Tower Grove House At Christmas

Tower Grove House will be closed December 12 for holiday decoration; but will reopen for visitation thereafter daily from 9 a.m. to 4 p.m. The following people and/or groups will be in charge of the various room and area decorations: outside tree, the David Goudy family; hallway and Mr. Shaw's office, Women's Executive Board; dining room, Tower Grove House Historical Committee; kitchen, St. Louis Herb Society; twin parlors, Tower Grove House Auxiliary; Garneau Room, Sowing Circle Garden Club; January Room and upstairs study, Plant Shop; Shaw bedroom, Frontenac Garden Club; guest room and all windows, Ladue Garden Club.

24th Annual Systematics Symposium: African Systematic Studies

During the 24 years of its existence, the Garden's Annual Symposium has become a tradition in the worldwide systematics community. The topics discussed vary from year to year, but the Symposium always attracts botanists and zoologists from all over the United States and often the world.

The National Science Foundation, through a grant, supports the Symposium which is administered by Dr. Gerrit Davidse and the Garden's botany staff.

"African Systematics Studies" was the 1977 topic, appropriate because the Garden is the North American center for the study of African botany. The herbarium contains 300,000 specimens of plants from that area, some of which date from the founding of the herbarium through the purchase of the Bernhardi Herbarium in 1859.

It was not until Dr. Robert Woodson became curator of the herbarium in 1948 that any particular emphasis was put on the acquisition of African plants. During Dr. Woodson's curatorship, a particular effort was made to obtain photographs of type specimens which are deposited in several important European herbaria. These photographs are often nearly as useful as a specimen and duplicate prints of them have been exchanged with many other institutions. From 1964 to 1971, Dr. Walter H. Lewis headed the herbarium, and under his administration the Garden became recognized as the North American repository for African plant specimens. Also during that period, the B. A. Krukoff Memorial Fund was established to purchase additional African specimens. In 1975, Dr. Peter Goldblatt assumed the newly created B. A. Krukoff Curatorship of African Botany, thus establishing an active research program in the African flora at the Garden. During the past five years, six of the Garden's curators, in addition to Dr. Goldblatt, have made plant collecting expeditions to various parts of Africa. This is reflected in increased acquisition of new material from Africa. In 1965, 500 African plants were obtained; in 1971, 1,000 were obtained; in 1972, 8,000 were obtained; and during 1976, more than 15,000 new plants were obtained through exchange and purchase.

As usual, the Symposium featured speakers concerned with both plants and animals. Africa was divided into four large geographical segments, and invited speakers discussed the plants of each. The Garden was fortunate to be able to have three experts on the African flora visit from Europe, especially for this occasion.

Professor P. Quézel, from the Université de Droit, d'Economie et des Sciences d'Aix-Marseille, France, summarized what is known about the flora of northern Africa, which includes the Mediterra-

Principal speakers during the 24th Annual Systematics Symposium were, from left, Dr. Peter Goldblatt, B.A. Krukoff Curator of African Botany at the Garden; Dr. H. B. S. Cooke, Dalhousie University, Halifax, Nova Scotia; Dr. Clark Howell, the University of California-Berkeley; Dr. C. D. Michener, the University of Kansas, Prof. J. F. Leroy, director, Laboratorie de Phanerogamie, Museum National d'Histoire Naturelle, Paris; and Prof. P. Quezel, Universite de Droit, d'Economie et des Sciences d'Aix-Marseille, France.

nean and Saharan zones. Prof. Quézel has had wide experience in this part of Africa, and is the author of several books concerning the plants of this area.

Mr. J. P. M. Brenan, Director, Royal Botanic Garden, Kew, England, spoke about the flora of tropical Africa, while Dr. Peter Goldblatt of the Garden analyzed the very rich flora of southern Africa.

Professor J. F. Leroy, who is director of the Laboratoire de Phanérogamie, Muséum National d'Histoire Naturelle, Paris, France, discussed the very interesting and unique flora of Madagascar.

A surprise presentation during the Symposium was a short color film presented by Dr. D. Wein, University of Utah. Recently, Dr. Wein had proposed on the basis of circumstantial evidence that certain South African plants are pollinated by non-flying mammals, namely, mice. Recently, he produced a moving picture of these plants being visited and pollinated by a particular species of South African mouse. Fortunately for those attending the Symposium, Dr. Wein had brought his previously unseen motion picture film with him to the Symposium, and he was able to both show the film and explain the meaning of it to the audience.

The two zoologists who spoke at the Symposium were concerned with very different groups of animals. Dr. C. D. Michener, University of Kansas, discussed the biogeography of bees, with particular reference to African bees. Dr. H. B. S. Cooke, Dalhousie University, Halifax, Nova Scotia, discussed African mammals and the fossil record in an illustrated talk.

The evening speaker was Dr. Clark Howell, University of California, Berkeley, who discussed many of the recent discoveries about the kinds of conditions under which early man evolved in Africa. Clearly, many of the recently developed techniques for studying past environments will help to elucidate the problems surrounding the early evolution of man, and clearly also, studies of this interesting topic will become increasingly interdisciplinary.

The 24th Symposium was certainly one of the most interesting. The presence of speakers from England and France indicates the international importance of the event. That one of the world's leading experts on the flora of southern Africa is on the Garden's own staff reflects the important contribution the Garden is making to knowledge about Africa's flora. The papers from the Symposium will soon be published in expanded form in the Garden's *Annals*—an issue which will contain the best and most up-to-date summary of much of what we know about Africa's biota.

AN ALDERMANIC VISIT—Dr. Peter H. Raven, left, Garden director, conducts a recent Flower Wagon tour for St. Louis Mayor James F. Conway and members of the St. Louis Board of Aldermen.

Living Gifts for the '77 Hol

Christmas is many things to many people. It is safe to say that at this season more than any other, love and admiration find unique fulfillment in the art of giving.

This year, experience the infinite array of living gifts in the Plant Shop. Nothing quite matches the poinsettia for setting the holiday mood; few gifts can claim the ongoing thrill of a flourishing green appointment to one's home.

The selection this season will be grand, featuring all the traditional favorites as well as the unusual and the rare. You are cordially invited to experience the joy of giving a gift of life. Visit the Plant Shop this season and allow us to help you with the gift of life for a gift of love.

The Plant Shop is open from 10 a.m. to 4 p.m. daily.

Philodendron cannifolium.

The Plant Shop, reflections of botanical abundance

ay Season

For the 1977 holiday season, the Plant Shop is offering a wide variety of plant gifts in all sizes.

Spathiphyllum hybrid.

Mrs. G. F. Hasegawa

Friends and colleagues of Skeets Hasegawa were saddened and somehow felt diminished by her sudden death. While in California enrolling one of her daughters in college, she was suddenly taken ill and died.

Mrs. Hasegawa has long been an active friend of the Garden serving in many capacities. She recently retired as vice president of the Executive Board of Members. On that board she served as chairman of the preview party committee which included five parties a year. Skeets helped to create dried flower arrangements that were used in Tower Grove House and others that were sold in the Garden Gate Shop.

Another of her active roles was as a member of the Japan America Society. She will be remembered by all of those who knew her as a lovely, artistic, capable person.

Mrs. Hasegawa is survived by her husband, three daughters, her parents, three sisters and two brothers.

Dr. Raven Honored

Dr. Peter H. Raven, Garden director, was honored in November by the Flora Place Protective Association, on the occasion of its 25th Annual Installation Dinner. The Annual Flora Place Award for Civic Achievement reads as follows:

> *The Flora Place Protective Association presents this plaque to Peter H. Raven for his distinguished contribution to the advancement and national reputation of St. Louis and to the enjoyment and education of its citizens through the excellence of his work as Director of Missouri Botanical Garden. Dated: November 4, 1977*

Development Drive —A Progress Report

The Garden's development and capital improvement campaign, launched last August to raise $6 million for construction of a new Visitor Orientation/Education Center and other improvements, has reached and passed the "one third of the way" mark in less than four months of community-wide solicitation.

Robert R. Hermann, campaign chairman, reported that the $2 million mark in campaign pledges was reached in November when the Brown Group, Inc., Charitable Trust announced a $60,000 contribution to the campaign.

Magnet School, Garden Program Renewed For 1977-78

For the second year, federal funds have been made available under the Emergency School Aid Act (ESAA) for the Garden's education staff to continue the plant science program with Stix Magnet Schools. This year's program will feature a series of eight workshop sessions for the teachers. Some sessions will be at the Arboretum and others at the Garden. The workshops are designed to increase awareness among the teachers involved of the resources of the Garden. This awareness will serve to guide teachers, with the help of Garden staff, in curriculum planning and enable full utilization of the Garden as a valuable resource. Among the topics for these sessions will be plant physiology, microscope techniques and a joint program with the Art Museum on Japanese art, which will relate to the Japanese Garden.

David Goudy will serve as project director and will be working with Ken Peck, Susanne McNamara, the Arboretum staff and one additional person of the education staff on this continuing project. This exciting project is one of several co-operative programming efforts in which the Garden serves as a major cultural resource in assisting St. Louis public schools. The Magnet school program is a federally funded effort to aid desegregation and reduce racial isolation. Children will be involved in innovative experiences at the Garden and Arboretum, which will be continued and expanded in the classroom.

The objectives of the Garden association with Stix Magnet School are three-fold. One: small group activities to encourage student cooperation and promote investigative learning; two: scientific enrichment activities at the Garden and Arboretum that cannot be easily duplicated in the classroom; and three: to foster an appreciation and increase the student's awareness of thenatural environment.

Southern Comfort

A toast to spring in the South, the Garden's next Members' trip, will feature New Orleans, Natchez, Jackson, and Biloxi with three nights on the Delta Queen riverboat. Plan to come aboard for Southern fun—March 31 to April 9.

For more information, call the Members' Office, 772-7600, Ext. 25.

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Outdoor garden chores are nearly over for the season. A final raking and cleaning of the garden might be necessary. Additional debris might be added to the compost pile. Then, take time to curl up in an armchair or sofa and read some of the new garden books to get ideas for next spring. While memories are still fresh, it is a good idea to note the plants that did not do well in the garden and plan to replace these with different varieties next spring.

December is the month of gift giving, so it is appropriate to present garden friends with certificates from garden shops where they may purchase gift items for use in the garden next spring. Amaryllis bulbs which come prepotted make ideal gifts. The plant is easily grown by following the directions and will flower for the Christmas holiday or shortly after. Wait to bring bulb stock in for forcing until after the first of January as nine weeks of cool growing temperatures below 40° are required for best results.

HOME GREENHOUSES

Home greenhouses need to be watched for temperature fluctuations. Some fresh air daily can be very beneficial for plants and reducing night temperature can cut down the energy bill. Place frames around the greenhouse so that plastic is suspended on the outer edges of the greenhouse and can be drawn across the top of the plants in late afternoon. The heat can be reduced considerably but kept high around plants where it is needed. Check regularly for insects. Since red spider can be a problem, control with Pentac. Plants both indoors and in the greenhouse need careful attention. Overwatering can kill many plants by cutting down on the loss of air around the roots. Water only when plants have dried out considerably, but keep them moist enough to prevent wilting. Feeding should be avoided unless plants are growing actively or are flowering. Flowering plants, such as African violets and others, will need regular feeding to keep them in good condition. Most Christmas gift plants are best if given as cool an area as possible during the night hours but kept out of drafts. A night temperature reduction of 15° will prolong their life considerably. However, make sure they get plenty of light during the day. Azaleas which are usually potted in peat moss should be submerged in enough water to cover soil ball until all air bubbles cease. Drain well before displaying. House plants that are doing poorly should be given more light and increased humidity. This can be accomplished by placing plants on trays containing pebbles. Keep water level below surface of pebbles because pots should not sit in water. As water evaporates humidity is increased, improving the environment. In some cases increasing the light will also bring back better color.

BURLAPPING

Plants which suffered last year from the severe cold can be protected by placing burlap around the plants. Fasten burlap to stakes driven into the ground around the plant. Allow six inches between ground and burlap, and one foot above plant to permit air to circulate. Azaleas, rhododendrons and boxwood which are exposed to southwest winds or the winter sun often suffer from burned foliage. It is important to see that all plants have had additional mulch around them to protect the ground from freezing too deeply. Wood ash from fireplaces makes excellent fertilizer. However, ashes should be stored in dry areas for application next spring. Value will be lost by using ashes too early. Wood ashes are excellent when applied around plants such as lilacs which flourish in an alkaline soil. Avoid using them around azaleas, rhododendrons and other plants which prefer an acid type soil.

This is a good time to clean up the garden storage area. Fertilizer should not be left in open bags where moisture can cause it to break down. It should be placed in airtight containers to prevent moisture accumulation. Sprays should be labeled and stored where temperatures are 50° to 60°; avoid freezing. Place out of reach of children. Garden tools should be thoroughly cleaned with soap and water, sharpened, if necessary, and rubbed with oil. Powdered insecticides and fertilizers can be stored in plastic bags, sealing the bags against moisture. Pots and other containers should be thoroughly cleaned, ready for use when it is time to begin seeding again. Seed left over from last year should be stored at temperatures of around 45° To prevent moisture damage, mix a small amount of powdered milk with the seed and store in airtight jars.

AFRICAN VIOLETS

African violets which are not flowering indicate insufficient light. Increase the light by placing them to a window where there is more direct light or close to artificial light. Usually flowering will begin within four to six weeks. Other house plants which are not doing well can be pruned back. Decrease watering until active growth resumes. Keep them in areas where they get good light. As the days begin to lengthen, new growth will begin to appear and plants will be much more sturdy. It is important to check for insects by examining under the leaves

(Continued on Page 10)

GARDENING IN ST. LOUIS . . .

(Continued from Page 9)

and along the stems. Any sign of insects should be controlled immediately by moving the plants to a well ventilated area on a mild day, spraying them thoroughly and leaving them to dry before moving them back into their permanent position. Check the soil for soil gnats and, if present, consider using Diazinon, one tablespoon per gallon of water, watering it into the soil in place of a regular watering. There should be sufficient moisture for a small amount to come through the bottom of the pot. An extra application may be necessary in 10 to 14 days for full control.

—Robert J. Dingwall
Chief Horticulturist

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